

# 2010-2029 Integrated Resource Plan for The Empire District Electric Company

# Volume III Supply-Side Resources Analysis (4 CSR 240-22.040)

September 2010

## Table of Contents

S.0 Volume III Summary	S-1
S.1 Existing Resources	S-1
S.2 Assumptions	S-2
S.3 Conventional Future Supply-Side Resources	S-3
S.4 Renewable Future Supply-Side Resources	S-4
S.5 Transmission and Smart Grid	S-4
S.6 Screening Analysis	S-5
1.0. Lature duration	1
1.0 Introduction	
1.1 Background	
1.2 Regulatory Requirements.	
1.2.1 4 CSR 240-22.040 Supply-Side Resources Analysis	1
1.2.2 Followup to the 2007 IRP Unanimous Stipulation and	7
Agreement (dated May 6, 2008)	/
2.0 Existing and Committed Supply-Side Resources	9
2.1 Existing Resources	
2.1.1 Asbury	
2.1.2 Riverton	
2.1.3 Iatan	
2.1.4 State Line	
2.1.5 Empire Energy Center	
2.1.6 Ozark Beach	
2.1.7 Plum Point	14
2.1.8 Purchased Power	14
2.1.8.1 Conventional	14
2.1.8.2 Renewables	15
2.1.9 Retirements	15
2.1.10 Emission Controls on Existing Units	15
2.1.11 Existing Plant Upgrades	
2.2 Committed Resources	16
	10
3.0 Assumptions	
3.1 Fuel Usage	
3.2 Coal Price Forecast	
3.3 Natural Gas Price Forecast	
3.3.1 Natural Gas Price Forecasting Methodology	
3.3.2 Natural Gas Risk Management Policy	
3.4 FuelOil Price Forecast	
3.5 Market Price Forecast	
3.6 Capacity Margin	
3.7 Financial Parameters	
3.8 Emission Costs	

# Table of Contents (continued)

4.0 New Conventional Resources	32
4.1 Supercritical Coal	32
4.2 Combustion Turbine	33
4.3 Combined Cycle	34
4.4 Nuclear	35
4.5 Distributed Generation	36
4.6 Integrated Gasification Combined Cycle	36
	20
5.0 New Renewable Resources	
5.1 Renewable Portfolio Standards	
5.1.1 RPS – Missouri	
5.1.2 RPS – Kansas	
5.1.3 RPS – Oklahoma	
5.2 Renewable Resources	
5.2.1 Wind	
5.2.1.1 Wind – Missouri	
5.2.1.2 Wind – Kansas	
5.2.1.3 Wind – Oklahoma	
5.2.1.4 Wind – Arkansas	
5.2.2 Biomass	
5.2.2.1 Biomass – Chicken/Turkey Waste	
5.2.2.2 Biomass – Landfill Gas	
5.2.2.3 Biomass – Additional Biomass	
5.2.3 Solar	55
6.0 Transmission	
6.1 Losses	
6.2 Smart Grid	
7.0 Screening Analysis	
7.1 Base Environmental Costs	
7.2 Probable Environmental Costs	64
Appendix A – SPP Transmission Expansion Plan Projects	68
Appendix B – Empire District STEP Projects	77
Appendix C – Empire Transmission and Distribution Construction Budget	79
Abbreviations	92

## List of Tables

Table S-1.	Natural Gas Price Forecast (\$/MMBtu)	5-2
	Emission Costs – Base Environmental	
Table 1-1	Clarification – Transmission and Distribution Planning	Δ
	Summary of Compliance with Reporting Requirements for IRP Rule for	
	pply-Side Resource Analysis (4 CSR 240-22.040(9))	
-	Summary of Compliance with the Requirements of the 2007 IRP	/
	animous Stipulation and Agreement	8
Ulla	annihous Supulation and Agreement	0
Table 2-1.	Empire Supply-Side Resources – Existing and Committed	.10
	Load and Capacity Summary 2010-2029 with Existing Resources,	
Cor	mmitted Resources and Potential Retirements and Contract Expirations	
wit	h Based Load Forecast for this IRP and no Contemplated	
Add	ditions (MW)	.18
Table 3-1.	Empire's Historical Delivered Fuel Costs (\$/MMBtu)	.19
Table 3-2.	Asbury Coal Price Forecast (\$/MMBtu)	.21
Table 3-3.	Riverton Coal Price Forecast (\$/MMBtu)	.21
Table 3-4.	Iatan Coal Price Forecast (\$/MMBtu)	.22
Table 3-5.	Plum Point Coal Price Forecast (\$/MMBtu)	.22
Table 3-6.	Natural Gas Price Forecast (\$/MMBtu)	.23
Table 3-7.	Levelized Fixed Charge Rates	.27
Table 3-8.	Emission Costs	.28
Table 3-9.	Carbon Dioxide Tax Assumptions	.28
Table 3-10	. Projected Coal Prices for Future Coal-Fired Resources – Carbon	
Sce	narios (\$/MMBtu)	.29
Table 3-11	. Projected Oil Prices – Carbon Scenarios (\$/MMBtu)	.29
Table 3-12	. Projected SO <sub>2</sub> Allowance Prices (\$/ton)	.30
Table 3-13	. Projected Annual NO <sub>x</sub> Allowance Prices (\$/ton)	.30
Table 3-14	. Projected Mercury Allowance Prices (\$000/ton)	.31
Table 1 1	Supercritical Coal Performance Parameters	22
	Combustion Turbine Performance Parameters	
	Combined Cycle Performance Parameters	
	Nuclear PPA Performance Parameters	
	Distributed Generation Performance Parameters	
	IGCC Performance Parameters	
1 auto 4-0.		.57
	Missouri Renewable Portfolio Standard	
	Empire Renewable Resources	
	Kansas Renewable Portfolio Standard	
	Installed Wind Energy in the U.S. (July 2010)	
Table 5-5.	Wind Energy Projects in Missouri	.44

iii

## List of Tables (continued)

Table 5-6. Wind Energy Projects in Kansas	
Table 5-7. Wind Energy Projects in Oklahoma	
Table 5-8. Wind Performance Parameters	
Table 5-9. Biomass Performance Parameters	54
Table 5-10.    Solar Performance Parameters	58
Table 6-1. Historical System MWh Losses	60

# List of Figures

Figure S-1. Henry Hub Gas Prices	S-3
Figure S-2. Baseload Screening Curves – Base Environmental	S-6
Eigure 2.1. 2000 Energy Provision by Evel Type	0
Figure 2-1. 2009 Energy Provision by Fuel Type	
Figure 2-2. Load and Capability Summary	1/
Figure 3-1. Henry Hub Gas Prices	24
Figure 3-2. 7x24 Market Prices - SPP	
Figure 3-3. 5x16 Market Prices - SPP	
Figure 5-1. Wind Turbine Configurations	41
Figure 5-2(a). Wind Resources in Missouri	
Figure 5-2(b). Wind Resources in Missouri	
Figure 5-3(a). Kansas Wind Resource Map	
Figure 5-3(b). Kansas Wind Resource Map	
Figure 5-4(a). Oklahoma Wind Resource Map	
Figure 5-4(b). Oklahoma Wind Resource Map	
Figure 5-5(a). Arkansas Wind Resource Map	
Figure 5-5(b). Arkansas Wind Resource Map	
Figure 5-6. Biomass Resources in Missouri	
Figure 5-7. Modern Landfill	
Figure 5-8. Landfill Gas Energy Potential Based on 2005-2014 Minimum Gas	
Flows	
Figure 5-9. Biomass Wood Waste Facility	
Figure 5-10. Photovoltaic Cell	
Figure 5-11. Solar Photovoltaic Resource of the United States	56
Figure 5-12. Concentrating Solar Power Facility	57
Figure 5-13. Concentrating Solar Power Resource of the United States	57
Figure 7-1. Baseload Screening Curves – Base Environmental	62
Figure 7-2. Intermediate Screening Curves – Base Environmental	
Figure 7-3. Intermittent Screening Curves – Base Environmental	
Figure 7-4. Peaking Screening Curves – Base Environmental	
Figure 7-5. Critical Uncertain Factors	
Figure 7-6. Baseload Screening Curves – Probable Environmental	
Figure 7-7. Intermediate Screening Curves – Probable Environmental	
Figure 7-8. Intermittent Screening Curves – Probable Environmental	
Figure 7-9. Peaking Screening Curves – Probable Environmental	

v

#### S.0 Volume III Summary

This supply-side volume of Empire's 2010 Integrated Resource Plan (IRP) contains:

- information on Empire's existing resources including opportunities to upgrade or retire specific resources
- assumptions used for the optimization modeling and risk analysis
- the supply-side resources both conventional and renewable that were available for the model to consider in the optimization
- information on transmission system additions and associated smart grid plans
- the screening analysis with the resulting rankings used prior to resource modeling in the optimization models.

#### S.1 Existing Resources

Empire's existing resources to meet customer obligations include coal-fired units, natural gas-fired combustion turbines (CT), a hydroelectric facility, ownership shares in coal-fired units, an ownership share in a combined cycle (CC) unit, and long-term PPAs for coal and wind. Modifications and upgrades to Empire's existing units have occurred periodically in the past. Other modifications and upgrades are expected to occur in the future:

- Selective catalytic reduction equipment was installed in Asbury in 2008. In the future, it may be necessary to install additional air pollution control equipment at Asbury including a baghouse, scrubber, and powder activated carbon system (collectively referred to as the Asbury Air Quality Control System (AQCS)).
- \*\*\_\_\_\_

\*\*

- When Riverton 12 was installed, adequate natural gas piping and transmission were designed and built to accommodate its conversion to a combined cycle unit at some point in the future. The potential Riverton 12 conversion to a combined cycle unit was considered as a candidate resource in this IRP.
- No major upgrades or environmental equipment are expected for either State Line or the Empire Energy Center units during the planning horizon.
- New water wheels were installed at Ozark Beach during the 2002-2004 time frame. If the U.S. Army Corps of Engineers implements the White River Reallocation Project, the amount of energy that Ozark Beach will provide in the future will be reduced.
- Empire's normal, ongoing maintenance program at each of its plants addresses critical operational and mechanical issues to ensure the longevity of the units.

#### S.2 Assumptions

A wide variety of data assumptions must be made for IRP modeling. These assumptions include fuel price forecasts, market price forecasts, capacity margin requirements, financial parameters, and emission costs. Parameters for generating resources, e.g., heat rates, operating and maintenance (O&M) costs, maintenance schedules, and forced outage rates, must also be specified. The load and energy forecast, an important series of assumptions, is described in Volume II.

Two of the most significant assumptions underlying this IRP are the natural gas price assumptions and the costs for various forms of air emissions. These assumptions are shown in Table S-1, Figure S-1, and Table S-2. Four levels of carbon regulation, including a no carbon regulation case, were evaluated. Empire has assumed that if carbon regulation were implemented, it would be in the form of a cap and trade system.

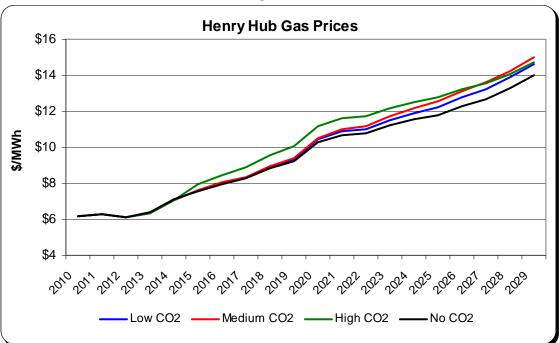
Natural Gas Price Forecast (\$/MMBtu)						
Year	Base CO <sub>2</sub>	No CO <sub>2</sub> Case	Low CO <sub>2</sub> Case	High CO <sub>2</sub>		
	Case			Case		
2010	6.16	6.16	6.16	6.16		
2011	6.30	6.30	6.30	6.30		
2012	6.12	6.13	6.12	6.12		
2013	6.35	6.37	6.35	6.35		
2014	7.07	7.11	7.07	7.07		
2015	7.63	7.58	7.59	7.92		
2016	8.03	7.95	7.98	8.47		
2017	8.34	8.27	8.31	8.90		
2018	8.94	8.84	8.90	9.58		
2019	9.39	9.23	9.33	10.06		
2020	10.49	10.29	10.45	11.19		
2021	11.00	10.68	10.89	11.60		
2022	11.17	10.78	11.00	11.70		
2023	11.72	11.20	11.49	12.16		
2024	12.17	11.55	11.90	12.51		
2025	12.56	11.80	12.21	12.77		
2026	13.13	12.28	12.77	13.22		
2027	13.59	12.69	13.25	13.57		
2028	14.23	13.29	13.89	14.06		
2029	14.99	14.02	14.63	14.73		

S-2

Table S-1 Natural Gas Price Forecast (\$/MMBtu)

Source: Ventyx

Figure S-1



Source: Ventyx

Table S-2				
<b>Emissions Costs – Base Environmental</b>				

Emissions Costs – Base Environmental						
Year	SO <sub>2</sub> (\$/ton)	NO <sub>x</sub> (\$/ton)	Hg (\$000/ton)	CO <sub>2</sub> (\$/ton)		
2015	153	1,006	40,000	21.48		
2016	162	1,035	40,000	24.12		
2017	170	1,063	40,000	27.04		
2018	177	1,090	40,000	30.09		
2019	182	1,106	40,000	32.21		
2020	186	1,120	40,000	34.66		
2021	188	1,131	40,000	37.22		
2022	188	1,131	40,000	40.19		
2023	188	1,131	40,000	43.23		
2024	188	1,131	40,000	46.87		
2025	188	1,131	40,000	50.18		
2026	188	1,131	40,000	53.90		
2027	188	1,131	40,000	58.00		
2028	188	1,131	40,000	62.35		
2029	188	1,131	40,000	67.18		

Source: Hg developed by Empire. Other costs developed by Ventyx

#### S.3 Conventional Future Supply-Side Resources

Empire considered a broad range of conventional resources as options for the future. These included: supercritical coal (ownership and power purchase agreement (PPA)), combustion turbine (CT), combined cycle (CC), nuclear (PPA only), distributed generation, and integrated gasification combined cycle (IGCC). To take advantage of economies of scale, Empire assumed that the nuclear option involved a PPA from a unit built by one or more other utilities in the region. The supercritical coal option was modeled as an ownership share of a unit built in the region. Combined cycle options included both new units as well as the conversion of Riverton 12 to a CC unit.

Resources using carbon capture and sequestration (CCS) were not assumed to be commercially viable within the planning horizon for the IRP. Parameters were developed for each of supercritical coal with CCS, combined cycle with CCS and IGCC with CCS and are presented in the tables containing data on each of the options. However, these resources were not options considered in the optimization modeling as they were not available during the twenty-year planning horizon of this IRP.

#### S.4 Renewable Future Supply-Side Resources

A range of potential renewable resources were considered as possible future supply-side resources. These included wind, landfill gas, biomass and solar thermal. Solar photovoltaics (PV) was considered as a demand-side option but did not pass the cost effectiveness screening and was therefore not considered further in the modeling.

#### S.5 Transmission and Smart Grid

Empire believes that at least some of the resources that will be required over the planning horizon may have significant transmission costs associated with them. Empire is a member of the Southwest Power Pool (SPP) and, as such, is now reliant on the SPP's determination of which transmission lines will be built and on what schedule. As a member of SPP, Empire is assigned a cost sharing allocation of all lines that are built in the SPP. That cost allocation varies per line.

The SPP conducts three studies directly associated with transmission planning: Large Generation Interconnect Studies, Aggregate Transmission Service Studies, and the SPP Transmission Expansion Plan (STEP). The Large Generation Interconnect Study determines all of the modifications needed to connect a new generator into the transmission system. The Aggregate Transmission Service Studies determine system upgrades required to grant transmission service from a generation source to a load. The STEP determines upgrades required for a reliable transmission system and provides a screening of potential economic projects. Until a specific line is submitted to the SPP, it is not possible to estimate what the actual cost to Empire will be. Therefore, Empire modeled a generic transmission cost adder for each alternative resource examined in this IRP.

As of January 2005, the SPP uses a Federal Energy Regulatory Commission (FERC)approved process called an Aggregate Transmission Service Study. In this process, SPP combines all long-term point-to-point and all long-term network resource transmission service requests received during a sequential four-month open season into a single aggregate transmission service study. Such an aggregated analysis should result in a more optimal expansion of the SPP transmission system than occurred previously with less aggregated analyses.

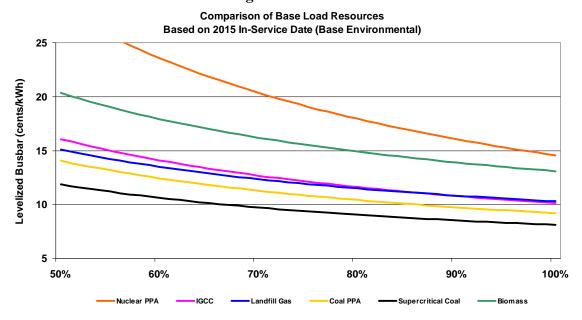
Empire actively participates in transmission planning in the SPP through committee membership, attending meetings, participation as a customer and a transmission owner in the development and implementation of SPP's transmission studies, and other methods. In two recent cases involving the Open Access Transmission Tariff in the SPP, Empire filed protests with the FERC. These cases involved the OATT "Highway/Byway" cost allocation methodology and the modified transmission planning process referred to as the Integrated Transmission Plan (ITP).

In March 2010, Empire assembled a team to develop a pilot program that would research and test the available metering products and technologies for an advanced metering infrastructure system such as would be required for Smart Grid. The main benefits of such a system are automated meter reading, on-demand meter reads, and instant outage notification. The proposed pilot program will include residential, commercial, and industrial customers, and will cover single-phase and three-phase applications. The plan is for the pilot program to implement two different communication technologies via two separate phases. The details of the pilot program are pending completion as this IRP was being finalized.

#### S.6 Screening Analysis

In accordance with the IRP supply-side rules, screening cost curves were developed under base environmental costs and probable environmental costs for baseload, intermediate, intermittent, and peaking resources (a total of eight screening cost curves). Rankings can be deduced by examination of those curves for any given capacity factor. As an example, the screening cost curve for baseload resources under the base environmental assumptions is presented in Figure S-2. Note that resources are compared for the capacity factors from 50% to 100% and that supercritical coal is the top resource across the entire range.

Figure S-2 Baseload Screening Curves – Base Environmental



Source: Venytx

#### **1.0 Introduction**

#### 1.1 Background

The Empire District Electric Company (Empire) is an operating public utility engaged in the generation, purchase, transmission, distribution and sale of electricity in parts of Missouri, Kansas, Oklahoma and Arkansas. Empire's service territory includes an area of about 10,000 square miles with a population of over 450,000. The service territory is located principally in southwestern Missouri and also includes smaller areas in southeastern Kansas, northeastern Oklahoma and northwestern Arkansas. The principal activities of these areas include light industry, agriculture and tourism.

Empire's total 2009 retail electric revenues were derived approximately 89.1% from Missouri customers, 5.1% from Kansas customers, 3.0% from Oklahoma customers and 2.8% from Arkansas customers. Empire supplies electric service at retail to 120 incorporated communities and to various unincorporated areas and at wholesale to four municipally owned distribution systems. The largest urban area served is the city of Joplin, Missouri, and its immediate vicinity, with a regional population of approximately 157,000. Empire's system hit a new maximum hourly demand of 1,199 MW on January 8, 2010 during extreme cold weather. The previous maximum demand of 1,173 MW was set on August 15, 2007. Empire's 2009 native customer load was 5,263,206 MWh (net system input or NSI). Empire's electric operating revenues in 2009 were derived as follows: residential 41.6%, commercial 31.4%, industrial 15.2%, wholesale on-system 4.2%, wholesale off-system 3.3% and other 4.3%.

#### **1.2 Regulatory Requirements**

#### 1.2.1 4 CSR 240-22.040 Supply-Side Resources Analysis

*PURPOSE:* This rule establishes minimum standards for the scope and level of detail required in supply-side resource analysis.

The analysis of supply-side resources shall begin with the identification of a variety
of potential supply-side resource options which the utility can reasonably expect to
develop and implement solely through its own resources or for which it will be a
major participant. These options include new plants using existing generation
technologies; new plants using new generation technologies; life extension and
refurbishment at existing generating plants; enhancement of the emission controls at
existing or new generating plants; purchased power from utility sources, cogenerators
or independent power producers; efficiency improvements which reduce the utility's
own use of energy; and upgrading of the transmission and distribution systems to
reduce power and energy losses. The utility shall collect generic cost and
performance information for each of these potential resource options which shall
include at least the following attributes where applicable:
(A) Fuel type and feasible variations in fuel type or quality;

1

(B) Practical size range;

- (C) Maturity of the technology;
- (D)Lead time for permitting, design, construction, testing and startup;
- (E) Capital cost per kilowatt;
- (F) Annual fixed operation and maintenance costs;
- (G) Annual variable operation and maintenance costs;
- (H) Scheduled routine maintenance outage requirements;
- (I) Equivalent forced-outage rates or full and partial-forced-outage rates;
- (J) Operational characteristics and constraints of significance in the screening process;
- (K) Environmental impacts, including at least the following:
  - 1. Air emissions including at least the primary acid gases, greenhouse gases, ozone precursors, particulates and air toxics;
  - 2. Waste generation including at least the primary forms of solid, liquid, radioactive and hazardous wastes;
  - 3. Water impacts including direct usage and at least the primary pollutant discharges, thermal discharges and groundwater effects; and
  - 4. Siting impacts and constraints of sufficient importance to affect the screening process; and
- (L) Other characteristics that may make the technology particularly appropriate as a contingency option under extreme outcomes for the critical uncertain factors identified pursuant to 4 CSR 240-22.070(2).
- (2) Each of the supply-side resource options referred to in section (1) shall be subjected to a preliminary screening analysis. The purpose of this step is to provide an initial ranking of these options based on their relative annualized utility costs as well as their probable environmental costs and to eliminate from further consideration those options that have significant disadvantages in terms of utility costs, environmental costs, operational efficiency, risk reduction or planning flexibility, as compared to other available supply-side resource options. All costs shall be expressed in nominal dollars.
  - (A) Cost rankings shall be based on estimates of the installed capital costs plus fixed and variable operation and maintenance costs levelized over the useful life of the resource using the utility discount rate. In lieu of levelized cost, the utility may use an economic carrying charge annualization in which the annual dollar amount increases each year at an assumed inflation rate and for which a stream of these amounts over the life of the resource yields the same present value.
  - (B) The probable environmental costs of each supply-side resource option shall be quantified by estimating the cost to the utility to comply with additional environmental laws or regulations that may be imposed at some point within the planning horizon.
    - 1. The utility shall identify a list of environmental pollutants for which, in the judgment of utility decision-makers, additional laws or regulations may be imposed at some point within the planning horizon which would result in compliance costs that could have a significant impact on utility rates.
    - 2. For each pollutant identified pursuant to paragraph (2)(B)1., the utility shall specify at least two (2) levels of mitigation that are more stringent than

existing requirements which are judged to have a nonzero probability of being imposed at some point within the planning horizon.

- 3. For each mitigation level identified pursuant to paragraph (2)(B)2., the utility shall specify a subjective probability that represents utility decision-maker's judgment of the likelihood that additional laws or regulations requiring that level of mitigation will be imposed at some point within the planning horizon. The utility, based on these probabilities, shall calculate an expected mitigation level for each identified pollutant.
- 4. The probable environmental cost for a supply-side resource shall be estimated as the joint cost of simultaneously achieving the expected level of mitigation for all identified pollutants emitted by the resource. The estimated mitigation costs for an environmental pollutant may include or may be entirely comprised of a tax or surcharge imposed on emissions of that pollutant.
- (C) The utility shall rank all supply-side resource options identified pursuant to section (1) in terms of both of the following cost estimates: utility costs and utility costs plus probable environmental costs. The utility shall indicate which supply-side options are considered to be candidate resource options for purposes of developing the alternative resource plans required by 4 CSR 240- 22.060(3). The utility shall also indicate which options are eliminated from further consideration on the basis of the screening analysis and shall explain the reasons for their elimination.
- (3) The analysis of supply-side resource options shall include a thorough analysis of existing and planned interconnected generation resources. The analysis can be performed by the individual utility or in the context of a joint planning study with other area utilities. The purpose of this analysis shall be to ensure that the transmission network is capable of reliably supporting the supply resource options under consideration, that the costs of transmission system investments associated with supply-side resources are properly considered and to provide an adequate foundation of basic information for decisions about the following types of supply-side resource alternatives:

(A) Joint participation in generation construction projects;

- (B) Construction of wholly-owned generation or transmission facilities; and
- (C) Participation in major refurbishment, upgrading or retrofitting of existing generation or transmission resources.
- (4) The utility shall identify and analyze opportunities for life extension and refurbishment of existing generation plants, taking into account their current condition to the extent that it is significant in the planning process.
- (5) The utility shall identify and evaluate potential opportunities for new long-term power purchases and sales, both firm and nonfirm, that are likely to be available over all or part of the planning horizon. This evaluation shall be based on an analysis of at least the following attributes of each potential transaction:
  - (A) Type or nature of the purchase or sale (for example, firm capacity, summer only);
  - (B) Amount of power to be exchanged;
  - (C) Estimated contract price;
  - (D) Timing and duration of the transaction;
  - (E) Terms and conditions of the transaction, if available;

- (F) Required improvements to the utility's generating system, transmission system, or both, and the associated costs; and
- (G) Constraints on the utility system caused by wheeling arrangements, whether on the utility's own system, or on an interconnected system, or by the terms and conditions of other contracts or interconnection agreements.
- (6) For the utility's preferred resource plan selected pursuant to 4 CSR 240-22.070(7), the utility shall determine if additional future transmission facilities will be required to remedy any new generation-related transmission system inadequacies over the planning horizon. If any such facilities are determined to be required and, in the judgment of utility decision-makers, there is a risk of significant delays or cost increases due to problems in the siting or permitting of any required transmission facilities, this risk shall be analyzed pursuant to the requirements of 4 CSR 240-22.070(2). [CLARIFICATION PROVIDED]
- (7) The utility shall assess the age, condition and efficiency level of existing transmission and distribution facilities, and shall analyze the feasibility and cost-effectiveness of transmission and distribution system loss-reduction measures as a supply-side resource. This provision shall not be construed to require a detailed line-by-line analysis of the transmission and distribution system, but is intended to require the utility to identify and analyze opportunities for efficiency improvements in a manner that is consistent with the analysis of other supply-side resource options. [CLARIFICATION PROVIDED]

# Table 1-1 Clarification – Transmission and Distribution Planning

#### Applies to: 4 CSR 240-22.040 (6) 4 CSR 240-22.040 (7)

The existing IRP Rule predates the current Southwest Power Pool, Inc regional transmission organization's (SPP RTO) transmission planning process and does not contemplate such an organization. SPP conducts three studies directly associated with transmission planning: Large Generation Interconnection Studies, Aggregate Transmission Service Studies, and the SPP Transmission Expansion Plan. Empire actively participates, as a customer and transmission owner, in the development and implementation of all of the transmission studies conducted by SPP. In addition, Empire is continually monitoring the distribution system and looking for cost effective ways to maintain and improve the distribution system.

Empire will provide a section outlining the SPP transmission planning processes and the extent of Empire's participation in these processes in its upcoming IRP filing. The distribution system maintenance and improvements that are under consideration will also be described in the IRP report. The results of the studies and the impacts on Empire will also be summarized. Like Empire's last IRP filing, the SPP Expansion Plan projects and Empire's most current Transmission and Distribution Construction Budget will be provided as appendices to the Supply-Side Resource Analysis report.

(8) Before developing alternative resource plans and performing the integrated resource analysis, the utility shall develop ranges of values and probabilities for several important uncertain factors related to supply resources. These values can also be used to refine or verify information developed pursuant to section (2) of this rule. These

cost estimates shall include at least the following elements and shall be based on the indicated methods or sources of information:

- (A) Fuel price forecasts over the planning horizon for the appropriate type and grade of primary fuel and for any alternative fuel that may be practical as a contingency option.
  - 1. Fuel price forecasts shall be obtained from a consulting firm with specific expertise in detailed fuel supply and price analysis or developed by the utility if it has expert knowledge and experience with the fuel under consideration. Each forecast shall consider at least the following factors as applicable to each fuel under consideration:
    - A. Present reserves, discovery rates and usage rates of the fuel and forecasts of future trends of these factors;
    - B. Profitability and financial condition of producers;
    - C. Potential effect of environmental factors, competition and government regulations on producers, including the potential for changes in severance taxes;
    - D. Capacity, profitability and expansion potential of present and potential fuel transportation options;
    - E. Potential effects of government regulations, competition and environmental legislation on fuel transporters;
    - F. In the case of uranium fuel, potential effects of competition and government regulations on future costs of enrichment services and cleanup of production facilities; and
    - G. Potential for governmental restrictions on the use of the fuel for electricity production.
  - 2. The utility shall consider the accuracy of previous forecasts as an important criterion in selecting providers of fuel price forecasts.
  - 3. The provider of each fuel price forecast shall be required to identify the critical uncertain factors that drive the price forecast and to provide a range of forecasts and an associated subjective probability distribution that reflects this uncertainty;
- (B) Estimated capital costs including engineering design, construction, testing, startup and certification of new facilities or major upgrades, refurbishment or rehabilitation of existing facilities.
  - 1. Capital cost estimates shall either be obtained from a qualified engineering firm actively engaged in the type of work required or developed by the utility if it has available other sources of expert engineering information applicable to the type of facility under consideration.
  - 2. The provider of the estimate shall be required to identify the critical uncertain factors that may cause the capital cost estimates to change significantly and to provide a range of estimates and an associated subjective probability distribution that reflects this uncertainty;
- (C) Estimated annual fixed and variable operation and maintenance costs over the planning horizon for new facilities or for existing facilities that are being upgraded, refurbished or rehabilitated.

- 1. Fixed and variable operation and maintenance cost estimates shall be obtained from the same source that provides the capital cost estimates.
- 2. The critical uncertain factors that affect these cost estimates shall be identified and a range of estimates shall be provided, together with an associated subjective probability distribution that reflects this uncertainty;
- (D) Forecasts of the annual cost or value of sulfur dioxide emission allowances to be used or produced by each generating facility over the planning horizon.
  - 1. Forecasts of the future value of emission allowances shall be obtained from a qualified consulting firm or other source with expert knowledge of the factors affecting allowance prices.
  - 2. The provider of the forecast shall be required to identify the critical uncertain factors that may cause the value of allowances to change significantly and to provide a range of forecasts and an associated subjective probability distribution that reflects this uncertainty; and
- (E) Annual fixed charges for any facility to be included in rate base or annual payment schedule for leased or rented facilities.
- (9) Reporting Requirements. To demonstrate compliance with the provisions of this rule, and pursuant to the requirements of 4 CSR 240-22.080, the utility shall furnish at least the following information:
  - (A) A summary table showing each supply resource identified pursuant to section (1) and the results of the screening analysis, including:
    - 1. The calculated values of the utility cost and the probable environmental cost for each resource option and the rankings based on these costs;
    - 2. Identification of candidate resource options that may be included in alternative resource plans; and
    - 3. An explanation of the reasons why each supply-side resource option rejected as a result of the screening analysis was not included as a candidate resource option;
  - (B) A list of the candidate resource options for which the forecasts, estimates and probability distributions described in section (8) have been developed or are scheduled to be developed by the utility's next scheduled compliance filing pursuant to 4 CSR 240-22.080;
  - (C) A summary of the results of the uncertainty analysis described in section (8) that has been completed for candidate resource options; and
  - (D) A summary of the mitigation cost estimates developed by the utility for the candidate resource options identified pursuant to subsection (2)(C). This summary shall include a description of how the alternative mitigation levels and associated subjective probabilities were determined and shall identify the source of the cost estimates for the expected mitigation level.

Table 1-2 documents how the reporting requirements for 4 CSR 240-22.040, the IRP Rules for Supply-Side Resource Analysis, have been addressed.

Side Resource Analysis (4 CSR 240-22.040 (9))						
Rule	Description	Location in Report				
22.040 (9) (A)	Summary table requirements	Tables 7-1 through 7-10				
22.040 (9) (B) Candidate resource options Section 4.0 and Section 5.0						
22.040 (9) (C)	Results of uncertainty analysis	Volume V				
22.040 (9) (D)	Emission rates – Section 4.0 Allowance Costs – Section 3.0					

 Table 1-2

 Summary of Compliance with Reporting Requirements for IRP Rule for Supply-Side Resource Analysis (4 CSR 240-22.040 (9))

# **1.2.2** Followup to the 2007 IRP Unanimous Stipulation and Agreement (dated May 6, 2008)

In the 2007 IRP Unanimous Stipulation and Agreement dated May 6, 2008, Empire agreed to undertake the following tasks related to supply-side resource analysis prior to or as a part of its next IRP filing:

- Any costs not listed separately shall be identified with documentation that those costs are included in the total costs.
- Consider and analyze upgrades to all existing plant and detail that analysis.
- Cost rankings for supply-side resources will be provided unless Empire is granted a waiver from this requirement or there is a change in this part of the IRP rule.
- Consider other long-term PPAs [in addition to wind] as candidate resources.
- Identify critical uncertain factors for annual fixed and variable operation and maintenance costs, describe why these costs were or were not deemed critical factors unless Empire is granted a waiver from this requirement or there is a change in this part of the IRP rule.
- Analyze dispatchable renewable resources such as landfill gas generation and additional biomass technologies; solar-based non-dispatchable renewable technologies such as photovoltaic (PV) and solar thermal generation resources; and potential energy efficiency improvements of existing resources.
- If any resource options are eliminated during the screening phase, the Company will provide an explanation of the process used to eliminate it.

Table 1-3 provides the location in this volume or in another volume of this IRP in which a specific portion of the requirements from the 2007 IRP Unanimous Stipulation and Agreement has been addressed.

 Table 1-3

 Summary of Compliance with the Requirements of the 2007 IRP Unanimous

 Stipulation and Agreement

S&A Issue – Brief Description	Location in Report		
Costs not identified separately to be	Sections 3.0, 4.0 and 5.0		
documented as being in the total costs			
Document analysis of consideration of	Section 2.1.11		
upgrades for existing plants			
Cost rankings for supply-side resources	Tables 7-1 through 7-10		
Long-term PPAs in addition to wind	Section 4.0 – Coal PPA and Nuclear PPA		
considered as possible resources			
Critical uncertain factors for annual fixed	Section 4.0 and Volume V		
and variable O&M costs			
Analyze dispatchable renewable resources	Section 5.2.2		
such as landfill gas and biomass			
Analyze solar-based non-dispatchable such	Section 5.2.3 and Volume IV (solar PV as		
as PV and solar thermal	a DSM resource)		
Analyze potential energy efficiency	Section 6.1		
improvements of existing resources			
Explanation for any resource options	Section 4.1, Section 4.3		
eliminated during a screening phase			

#### 2.0 Existing and Committed Supply-Side Resources

The existing supply-side resources described in this IRP include those conventional and renewable resources that are in operation on the Empire system or for which Empire has power purchase agreements (PPA). Committed resources include those conventional and renewable resources for which commitments have already been made. Existing and committed as well as future resources were examined in the modeling process for this IRP.

#### 2.1 Existing Resources

Empire's existing resources to meet customer obligations include coal-fired units, natural gas-fired combustion turbines (CT), a hydroelectric facility, ownership shares in coal-fired units, an ownership share in a combined cycle (CC) unit, and long-term PPAs for coal and wind. These resources are summarized on Table 2-1. All unit ratings and environmental retrofit information described in this IRP represent ratings and assumptions in effect at the time the IRP was in the process of being completed. Units are rerated from time to time and all assumptions are subject to change.

In 2009, 54.5% of Empire's total system input (in kWh) was supplied by its steam and thermal generation units, 1.5% was supplied by its hydroelectric generation, and the remaining 44% was purchased power, including wind energy. As also shown on Figure 2-1, coal-fired energy purchased from others under contract constituted 18.6% of Empire's 2009 energy profile and wind energy purchases amounted to 15%.

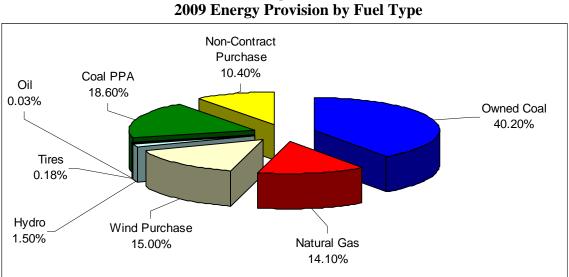


Figure 2-1 2009 Energy Provision by Fuel Type

 Table 2-1

 Empire Supply-Side Resources – Existing and Committed

Empire Supply-Side Resources – Existing and Committed						
Power Plant	Fuel Type	State	Interest (%)	Empire Capacity (MW)	Start Date	Facility Age (Years)
Asbury 1 & 2	Coal	MO	100	207	1970 & 1986	40 & 24
Riverton 7 & 8	Coal	KS	100	92 <sup>1</sup>	1950 & 1954	60 & 56
Iatan 1	Coal	MO	12	85	1980	30
Iatan 2 <sup>2</sup>	Coal	MO	12	102	2010	<1
Plum Point	Coal	AR	7.52	50	2010	<1
Riverton CTs $(9-12)^3$	Natural Gas	KS	100	194	1964, 1988, 1988 & 2007	46, 22, 22, & 3
Empire Energy Center	Natural	MO	100	267	1978 & 1981	32 & 29
CTs	Gas/Oil				2003 & 2003	7&7
State Line CT	Natural Gas/Oil	MO	100	96	1995	15
State Line CC	Natural Gas	MO	60	$300^{4}$	1997 &2001 <sup>5</sup>	13 & 9
Ozark Beach	Hydro	MO	100	16	1913	97
Total Empire Installed Capacity				1,409		
Long Term Power	Туре				End Date	Term
Purchases						
Plum Point	Coal			50	2015 <sup>8</sup>	
Elk River Windfarm (150 MW PPA)	Wind			$7^6$	2025 <sup>6</sup>	$20^{6}$
Meridian Way Wind Farm	Wind			87	2028 <sup>7</sup>	207
(105 MW PPA)						
Capacity Summary						
Total Coal				536		
Total Gas Turbine				557		
Total Combined Cycle				300		
Total Hydro				16		
Total Purchase including Wind				65		
TOTAL				1,474		

<sup>1</sup>Riverton 7 is rated at 38 MW, but can produce about 25 MW when solely burning coal. Riverton 8 is rated at 54 MW, but can produce about 45 MW when solely burning coal. Both units achieve the remainder of the capacity by over-firing natural gas.

<sup>2</sup>Iatan 2 is characterized as a committed unit. It is expected to enter commercial operation Fall of 2010. <sup>3</sup>Riverton 10 and 11 were manufactured in 1967 but were installed at Empire in 1988; they are 43 years old.

<sup>4</sup>Represents Empire's 60% share of a 500 MW State Line Combined Cycle (SLCC) unit.

<sup>5</sup>One of the gas turbines at State Line CC was installed in 1997 and hence is 13 years old. The other gas turbine and the steam turbine were installed in 2001.

<sup>6</sup>The Elk River Windfarm consists of 100 1.5 MW turbines for a total of 150 MW. For purposes of the IRP, 7 MW of its installed capacity is counted toward the Company's reserve margin. Although the term of the PPA is 20 years, the term can be extended once for a period of 5 years at Empire's option.

<sup>7</sup>The Meridian Way Windfarm began commercial operation on December 15, 2008. The facility is rated at 105 MW and approximately 8 MW is counted toward the Company's reserve margin.

<sup>8</sup>Empire owns an undivided ownership interest of 7.52% (approximately 50 MW) in Plum Point and has signed a PPA for an additional 50 MW. Empire has the right to convert the PPA to an undivided ownership interest in 2015.

#### 2.1.1 Asbury

The Asbury plant, located near Asbury, Missouri consists of two coal-fired units totaling 207 MW. Unit 1 was installed in 1970. Unit 2 was installed in 1986.

Many modifications have been made to the Asbury plant since Unit 1 achieved commercial operation in 1970. The precipitators were upgraded in 1977. The generator was rewound in 2007. A new state-of-the-art coal unloading facility was completed in 1990. In 1999, a new cooling tower was installed – the new fiberglass tower replaced the previous wood one. The cyclones were replaced in 2001, after they had operated for 30 years. Also in 2001, a distributed control system was installed. Selective catalytic reduction (SCR) for nitrous oxides (NO<sub>x</sub>) control was completed in 2008; equipment to overfire air (also for NO<sub>x</sub> control) was installed in 2001 and 2004. Routine maintenance, annual maintenance, and long-term maintenance is conducted on each of the units reflecting short-term and long-term cycles. As an example, the turbines are torn down approximately every 5-6 years (depending on hours of operation and the number of starts) and blades are replaced periodically as necessary. \*\*

\*\*

In the future, it may be necessary to install additional pollution control equipment (referred to as Air Quality Control System (AQCS)) at the Asbury station for compliance with regulations relating to SO<sub>2</sub>, particulates and mercury. During the period of time that the IRP was being prepared, studies were being conducted by Black & Veatch and analysis was conducted in the IRP modeling to examine the economic desirability of installing the AQCS at Asbury versus retiring the plant. The AQCS equipment being examined included a scrubber, baghouse and powder activated carbon system.

\*\*

In anticipation of potential regulation for ash ponds being issued in the future, Empire has also been examining the need for a new ash landfill and a bottom ash conveyance system. A study is being performed by Aquaterra. The equipment required and the costs for implementation have been identified for this IRP.

#### 2.1.2 Riverton

Empire's Riverton generating plant located at Riverton, Kansas, has two steam-electric generating units (Riverton 7 and 8) with an aggregate generating capacity of 92 MW and four natural gas-fired combustion turbine units (Riverton 9, 10, 11 and 12) with an aggregate generating capacity of 194 MW. Riverton 7 is rated at 38 MW, but can only produce about 25 MW when solely burning coal. The remainder of the capacity is

achieved by over-firing natural gas. Riverton 8 is rated at 54 MW, but can produce about 45 MW when solely burning coal. The remainder of the capacity is achieved by overfiring natural gas.

Riverton 7 and 8 burn a blend of coal and petroleum coke. The units all have their original control systems. Precipitators were installed in 1976 for dust and particulate control.

Riverton 9 (12 MW and currently 46 years old) is capable of burning oil in addition to natural gas and is permitted such that it can burn oil. The operation of Riverton units 9 and Riverton 7 are linked. Riverton 10 and 11 (installed in 1988) have the capability to burn oil but under their permit may only do so under emergency conditions. Riverton 10 and 11 both have black start capability.

Routine maintenance is performed on all units. The units are inspected at regular intervals and teardowns occur according to the manufacturers' recommendations. When Riverton 12 was installed in 2007, adequate natural gas piping and transmission were designed and built to accommodate its conversion to a combined cycle unit at some point in the future. Riverton 12's summer rating is currently 150 MW. If Riverton 12 were converted to a combined cycle unit, the CC rating would be a total of 250 MW, representing an addition of 100 MW. The conversion of Riverton 12 to a CC from a CT

is a candidate resource in this IRP. \*\*\_\_\_\_\_ \*\* \_\_\_\_\_

\*\* is driven by requirements for the U.S. Environmental Protection Agency (EPA) to promulgate final standards addressing mercury and other hazardous air pollutants by November 2011. The mercury standards must delineate maximum achievable control technology (MACT). If the EPA does not meet the requirement to promulgate rules by 2012, all existing units will need to meet a 90% MACT standard by 1/1/2015. The 90% MACT standard would \*\*\_\_\_\_\_

\*\*

### 2.1.3 Iatan 1

Empire owns a 12% undivided interest in the nominal 670 MW coal-fired Iatan 1 located near Weston, Missouri, 35 miles northwest of Kansas City, Missouri, as well as a 3% interest in the site and a 12% interest in certain common facilities. Empire is entitled to

12

NP

12% of the unit's available capacity and is obligated to pay for that percentage of the operating costs of the unit.

AQCS additions at Iatan 1 included an SCR for the removal of  $NO_x$ , a wet scrubber for the removal of sulfur dioxides (SO<sub>x</sub>), a fabric filter baghouse for the removal of particulate matter, and a powder-activated carbon system for the removal of mercury. These additions, made in order to comply with U.S. Environmental Protection Agency regulations and to meet the requirements for an air permit for Iatan 2, were completed on April 19, 2009.

#### 2.1.4 State Line

Empire's State Line Power Plant, located west of Joplin, Missouri, presently consists of State Line Unit 1, a CT with generating capacity of 96 MW and a CC unit (State Line CC) with generating capacity of 500 MW, of which Empire is entitled to 60%, or 300 MW. All units at the State Line Power Plant burn natural gas as a primary fuel, with State Line Unit 1 having the ability to also burn fuel oil as a backup fuel. Burning fuel oil requires water injection. The combined cycle consists of two CTs with a heat recovery steam generator (HRSG) on the back of each CT. Steam from the HRSGs is fed to the steam turbine. The CC can operate in two modes: 1) 1 x 1 mode (one CT and the steam turbine) with capacity of 150 MW (Empire's share) and 2) 2 x 1 mode (two CTs and the steam turbine) with total capacity of 300 MW (Empire's share). The total State Line CC heat rate is roughly 7,400 Btu/kWh.

No major upgrades or additional environmental equipment are expected for any unit at the State Line facility during the planning horizon. Routine maintenance will be conducted. The SLCC CTs have dry low  $NO_x$  burners and there is an SCR on each HRSG.

### 2.1.5 Empire Energy Center

Empire has four CT peaking units at the Empire Energy Center in Jasper County, Missouri (near the town of La Russell), with an aggregate generating capacity of 267 MW. Energy Center units 1 and 2 were installed in 1978 and 1981. They are simple cycle frame CTs. Energy Center units 3 and 4 are aeroderivative CTs installed in 2003. These two newer units have the ability to be on line in ten minutes or less and are thus considered quick start units.

These peaking units operate on natural gas as well as fuel oil. These units do not require water injection when they burn fuel oil. All units undergo routine maintenance with inspections on a regular cycle and equipment is refurbished as needed. All of the CTs use water injection to control  $NO_x$ .

#### 2.1.6 Ozark Beach

Empire's hydroelectric generating plant, located on the White River at Ozark Beach, Missouri, has a generating capacity of 16 MW (four 4 MW units). This facility entered operation in 1913 and will shortly be 100 years old.

New water wheels were installed at Ozark Beach in the 2002-2004 timeframe. In this IRP, the energy available from Ozark Beach was reduced in every year starting in 2011 to reflect the energy lost from the reallocation of water in the White River by the U.S. Army Corps of Engineers.

#### 2.1.7 Plum Point

The Plum Point Energy Station, a new 665-MW, sub-critical coal-fired generating facility being built near Osceola, Arkansas met in-service criteria on August 12, 2010 and has since been declared to be in commercial operation. Empire owns 7.52% (approximately 50 MW) of the project. In addition, Empire has a 30-year PPA for an additional 50 MW of capacity and an option to purchase an undivided ownership share of the 50 MW covered by the PPA in 2015.

Plum Point is equipped with an SCR for  $NO_x$  removal, a dry scrubber for SOx control, combustion controls for Volatile Organic Compounds (VOC) mitigation, and a fabric filter baghouse for the removal of particulate matter.

#### 2.1.8 Purchased Power

Empire has existing PPAs for both conventional and renewable resources during the planning horizon.

#### 2.1.8.1 Conventional

During the first part of 2010, Empire purchased power under a PPA with Westar Energy. The capacity and energy purchased under this contract were provided from the three coal-fired generating units at Westar's Jeffrey Energy Center. This contract was for 162 MW of capacity and energy. It expired on May 31, 2010.

In addition to its undivided ownership share of 7.52% (approximately 50 MW) in the Plum Point Energy Station, Empire entered into a PPA for an additional approximate 50 MW of capacity. Empire has the option to convert this PPA into an undivided ownership interest of approximately 50 MW in 2015.

During 2010, Empire entered into a short-term PPA with Merrill Lynch for 41 MW over a four-month period to help meet its summer peak demand. It expires September 30, 2010.

#### 2.1.8.2 Renewables

On December 10, 2004, Empire entered into a 20-year contract with PPM Energy to purchase all of the energy generated at the Elk River Windfarm located in Butler County, Kansas. The Windfarm began commercial operation on December 15, 2005. This facility consists of 100 1.5 MW turbines. Empire also has the ability to extend the contract term for five years after the end of the 20-year contract period. Empire has contracted to purchase all of the output of the project which is estimated to be approximately 550,000 MWh of energy per year. For purposes of the IRP, 7 MW of the 150 MW of installed capacity is counted toward the Company's reserve margin. This is the actual current rating of the facility calculated per SPP criteria.

In June 2007, Empire signed a contract with Horizon Wind Energy to buy wind energy from the Cloud County Wind Farm, LLC which receives energy from the 105 MW Meridian Way Wind Farm located in Cloud County, Kansas near Concordia. The facility is expected to generate approximately 350,000 MWh per year. The facility began commercial operation on December 23, 2008. For purposes of the IRP, 8 MW of the 105 MW of installed capacity is counted toward the Company's reserve margin. This is the actual current rating of the facility calculated per SPP criteria.

#### 2.1.9 Retirements

Empire's generating resources as shown in Table 2-1 include units that have been in operation for over 50 years. During the process of preparing this IRP, each plant manager and the Director of Environmental Services was interviewed. Topics covered during each interview included the age of the units, the maintenance schedule, known environmental requirements and effects of such on the units, and the ability to place additional generation at the plant site.

Barring significant changes in environmental regulations at the state or federal level, retirements of units \*\*\_\_\_\_\_\_\_\*\* over the planning horizon would occur only in the case of a catastrophic equipment failure where it would not be economically feasible for the unit to continue operation.

#### 2.1.10 Emission Controls on Existing Units

Outside of this IRP but concurrently, Empire hired Black & Veatch to examine the cost effectiveness of installing AQCS equipment on the Asbury plant in 2015. That analysis had not been completed at the time of the IRP filing although preliminary numbers were available for use in the IRP.

### 2.1.11 Existing Plant Upgrades

An examination of recent and possible upgrades at existing plants was conducted by Empire during the development of this IRP.

- New pollution control systems have recently been installed at the coal-fired Asbury and Iatan 1 units. Asbury was retrofitted with an SCR. A scrubber, SCR, and powder activated carbon system were installed at the jointly-owned Iatan unit 1 coal-fired unit.
- Both coal units that are expected to be in service in 2010 (Plum Point and Iatan 2) have environmental control equipment.
- A study was underway in 2010 to determine the costs and construction timeline associated with the Asbury AQCS.
- The possible conversion of Riverton Unit 12 (a combustion turbine) to a combined cycle unit is one of the potential supply-side resource options evaluated in this IRP.
- The plant managers and environmental staff were interviewed and discussed any potential changes to the generating facilities expected during the planning horizon.
- Empire installed new water wheels at the Ozark Beach hydroelectric facility during 2002-2004. This plant upgrade resulted in an average increased output as compared to the old wheels of over 16% in the 20 to 50 feet of net head range, with some net head points being well above the overall average increase.
- Empire's normal, ongoing maintenance program at each of its plants addresses critical operational and mechanical issues to ensure the longevity of the units.

#### 2.2 Committed Resources

Empire entered into a letter of intent with Kansas City Power & Light (KCP&L) on June 10, 2005, with respect to Empire's potential purchase of an undivided ownership interest in the proposed 850 MW supercritical coal-fired Iatan 2. Subsequently, a joint ownership contract was signed. This contract, announced in June 2006, provides for Empire's 12% ownership participation, approximately 102 MW of generation capacity, and a proportionate share of the construction, operation, and maintenance costs. At present, Empire expects the Iatan 2 unit to be commercial in the Fall of 2010.

After accounting for all existing resources (including deratings and retirements) and all planned resources, Empire faces a resource deficit around the \*\*\_\_\_\_\_\_\*\* based on the base load forecast for this IRP as shown in Table 2-2 and Figure 2-2. As part of Empire's normal budget cycle, an updated five-year load forecast has been developed. As a result of the new five-year load forecast (September 2010), Empire believes that the \*\*\_\_\_\_\_\_\*\*.

# Figure 2-2 Load and Capability Summary \*\*Highly Confidential in its Entirety\*\*

#### Table 2-2

#### Load and Capacity Summary 2010-2029 with Existing Resources, Committed Resources and Potential Retirements and Contract Expirations with Base Load Forecast for this IRP and no Contemplated Additions (MW) \*\*Highly Confidential in its Entirety\*\*

		<u> </u>

#### 3.0 Assumptions

A wide variety of data assumptions must be made for IRP modeling. Many of these assumptions are described in the following paragraphs and include fuel price forecasts, market price forecasts, capacity margin requirements, financial parameters, and emission costs. Parameters for generating resources, e.g., heat rates, operating and maintenance (O&M) costs, maintenance schedules, and forced outage rates, must also be specified. The load and energy forecast, an important series of assumptions, is described in Volume II.

#### 3.1 Fuel Usage

Table 3-1 shows a comparison of historical fuel costs, including transportation and other fuel-related costs, for Empire's facilities:

Empire's Historical Delivered Fuel Costs (\$/MMBtu)				
Fuel Type	2009	2008	2007	
Coal - Iatan	1.186	1.070	0.978	
Coal - Asbury	1.763	1.577	1.432	
Coal – Riverton	1.768	1.724	1.548	
Natural Gas	7.376	6.909	7.050	
Oil	14.318	16.721	14.870	

 Table 3-1

 Empire's Historical Delivered Fuel Costs (\$/MMBtu)

Empire's weighted cost of fuel burned per kWh generated was 3.1698 cents in 2009, 3.1307 cents in 2008, and 3.2197 cents in 2007.

The Asbury Plant is fueled primarily by coal with oil being used as the start-up fuel and tire-derived fuel (TDF) being used as a supplemental fuel. In 2009, Asbury burned a coal blend consisting of approximately 86.8% Western coal (referred to in this report as either Western or Powder River Basin – PRB coal) and 13.2% local coal (so-called blend coal) on a tonnage basis. Since Empire began burning TDF at Asbury, the equivalent of nearly 4.5 million passenger tires has been consumed as fuel.

The Riverton Plant fuel requirements are primarily met by coal with the remainder supplied by natural gas, petroleum coke, and oil. A Siemens V84.3 A2 combustion turbine (Unit 12) was installed at the Riverton plant in 2007. Riverton 12 and three other smaller units are fueled by natural gas. During 2009, Riverton Units 7 and 8 burned an estimated blend of approximately 82.1% Western coal and 17.9% petroleum coke on a tonnage basis.

All of the Western coal for Asbury and Riverton Units 7 and 8 is shipped to the Asbury Plant by rail, a distance of approximately 800 miles. The Western coal is transported from Asbury to Riverton via truck. Both local coal and petroleum coke are transported to Riverton and Asbury via truck.

Unit 1 at the Iatan Plant is a jointly-owned coal-fired generating unit. Empire's ownership share is 12% (approximately 85 MW). KCP&L is the operator of this plant and is responsible for arranging its fuel supply. The PRB coal burned in Iatan 1 is transported by rail by the Burlington Northern and Santa Fe (BNSF) Railway Company.

The coal-fired Plum Point Energy Station met the in-service criteria on August 12, 2010. Empire owns, through an undivided interest, 7.52% (approximately 50 MW) of the project's capacity. Empire has entered into a capital lease for railcars to provide the coal for this facility. Empire also has a long-term power purchase agreement (PPA) for an additional 50 MW from this facility.

The Energy Center and State Line simple cycle combustion turbine facilities are fueled primarily by natural gas with fuel oil available for use as needed. During 2009, fuel consumption at the Energy Center was 99.8% natural gas on a kWh generated basis. Essentially all of the State Line unit 1 generation came from natural gas in 2009. The SLCC unit is fueled 100% by natural gas.

Empire has firm transportation agreements with Southern Star Central Pipeline, Inc. for the transportation of natural gas to the State Line Power Plant for the jointly-owned combined cycle unit. This transportation agreement can also supply natural gas to State Line Unit No. 1, the Energy Center or the Riverton Plant, as elected by Empire on a secondary basis. In 2002, Empire signed a precedent agreement with Williams Natural Gas Company (now Southern Star Central), that provides additional transportation market zone capability through 2022. This contract provides firm market zone transport to the sites that previously were only served on a secondary basis. The majority of Empire's physical natural gas supply requirements will be met by short-term forward contracts and spot market purchases. Forward natural gas commodity prices and volumes are hedged in accordance with Empire's Risk Management Policy in an attempt to lessen the volatility in the Company's fuel expense and gain predictability.

#### 3.2 Coal Price Forecast

The first five years of the coal price forecasts used for the Asbury, Riverton, Iatan, and Plum Point facilities were derived by Empire fuels personnel and reflect contract knowledge over those years. The values for subsequent years use escalators based on the U.S. Department of Energy's Energy Information Administration's (EIA) May 2010 projections.

Coal price projections for Asbury are shown in Table 3-2, those for Riverton are in Table 3-3, the coal price projections for Iatan 1 and 2 are shown in Table 3-4, and Plum Point's coal price projections are found in Table 3-5. Many utilities that consume coal have recently experienced cost increases due to increases in the cost of coal transportation.

 Table 3-2

 Asbury Coal Price Forecast (\$/MMBtu) \*\* Highly confidential in its entirety\*\*



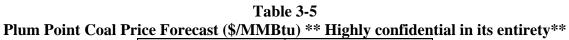
Riverton Coal Price Forecast (\$/MMBtu) \*\* Highly confidential in its entirety\*\*

1	

 Table 3-4

 Iatan Coal Price Forecast (\$/MMBtu) \*\* Highly confidential in its entirety\*\*

-	



•

#### 3.3 Natural Gas Price Forecast

The natural gas price forecast used for this IRP is based on the Ventyx Fall 2009 Power Market Advisory Service Electricity & Fuel Price Outlook modified by Ventyx. Natural gas prices were developed for four carbon scenarios: no carbon, and low, base and high carbon tax assumptions. Any carbon tax would start no earlier than 2015. The natural gas prices are correlated to the  $CO_2$  prices and are shown on Table 3-6 and Figure 3-1.

Natural Gas Price Forecast (\$/MMBtu)				
Year	Base CO <sub>2</sub>	No CO <sub>2</sub> Case	Low CO <sub>2</sub> Case	High CO <sub>2</sub>
	Case			Case
2010	6.16	6.16	6.16	6.16
2011	6.30	6.30	6.30	6.30
2012	6.12	6.13	6.12	6.12
2013	6.35	6.37	6.35	6.35
2014	7.07	7.11	7.07	7.07
2015	7.63	7.58	7.59	7.92
2016	8.03	7.95	7.98	8.47
2017	8.34	8.27	8.31	8.90
2018	8.94	8.84	8.90	9.58
2019	9.39	9.23	9.33	10.06
2020	10.49	10.29	10.45	11.19
2021	11.00	10.68	10.89	11.60
2022	11.17	10.78	11.00	11.70
2023	11.72	11.20	11.49	12.16
2024	12.17	11.55	11.90	12.51
2025	12.56	11.80	12.21	12.77
2026	13.13	12.28	12.77	13.22
2027	13.59	12.69	13.25	13.57
2028	14.23	13.29	13.89	14.06
2029	14.99	14.02	14.63	14.73

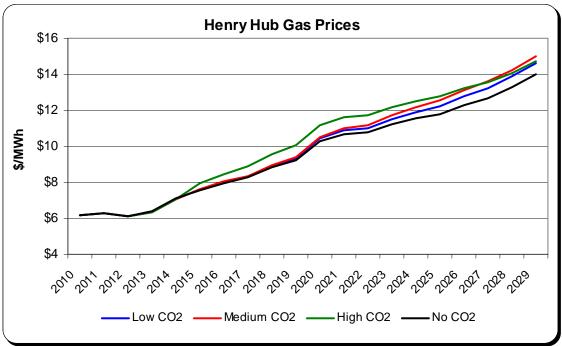
23

 Table 3-6

 Natural Gas Price Forecast (\$/MMBtu)

Source: Ventyx

Figure 3-1



Source: Ventyx

#### 3.3.1 Natural Gas Price Forecasting Methodology

Ventyx produces natural gas price forecasts for each month at individual pricing hubs using its Natural Gas Sub-Module. The Operations Component for the sub-module consists of a model of the aggregate U.S. natural gas sector. For each month and iteration, it executes in the following manner:

- The Operations Component includes an econometric model of the continental U.S. demand in each of the sectors other than power, relating monthly consumption to the Henry Hub price.
- For each iteration of the Operations Module, natural gas demand by the power sector is taken from the prior iteration of the Power Module.
- Liquid natural gas (LNG) supply is forecast using a proprietary global LNG model and Henry Hub prices from the previous iteration. This model utilizes forecasts of global LNG demand and supply.
- Domestic supply is represented in the Operations Components by exogenous continental U.S. production declines and exogenous assumptions about deliveries from Alaska; a pair of econometric equations relating continental U.S. productive capacity additions to Henry Hub prices in previous months and continental U.S. capacity utilization to the current Henry Hub/West Texas Intermediate (WTI) price; and net storage withdrawals to balance supply and demand to the extent available storage capacity will permit.
- The Henry Hub price is simulated as the price that balances demand and supply, including net storage withdrawals.

#### 3.3.2 Natural Gas Risk Management Policy

Empire originally enacted a Risk Management Policy (RMP) in 2001 that establishes the approach and internal policy that Empire will use to manage specifically its natural gas commodity risk. The policy is revised approximately each year to reflect increased knowledge and changes in markets and financial instruments. The RMP targets for hedging of natural gas are:

- A minimum of 10% of year four expected gas burn
- A minimum of 20% of year three expected gas burn
- A minimum of 40% of year two expected gas burn
- A minimum of 60% of year one expected gas burn<sup>1</sup>
- Up to 80% of any future year's expected requirement can be hedged if appropriate given the associated volume risk.

The RMP serves to minimize the exposure that Empire has to the impacts of fluctuating natural gas prices.

## **3.4 Fuel Oil Price Forecast**

To forecast No. 2 Fuel Oil, Ventyx uses a technique similar to natural gas, where representative current New York Mercantile Exchange (NYMEX) pricing is blended to its internal forward view. Since crude oil is the raw material used to produce distillate oil, jet kerosene, and heavy fuel oil (e.g., various sulfur grades of #6 residual oil) as well as gasoline, Ventyx derives fuel oil forecasts for generators from its WTI Reference Case Forecast.

Ventyx produces its WTI Reference Case based on NYMEX future prices for WTI Oil and Fuel Oil #2, product price relationships between fuel oils and long-term supply and demand analysis of the WTI and global crude oil markets. The WTI forecast is based on 72 months of NYMEX Futures prices and on subsequent supply/demand fundamentals for the remainder for the forecast period. The WTI NYMEX prices are incorporated directly for the first 36 months and for the following 36 months by mean regression analysis with the supply/demand analysis.

A similar estimation technique as used to forecast monthly natural gas prices is used to project monthly oil prices.

## **3.5 Market Price Forecast**

Market prices for the Southwest Power Pool (SPP) were projected by Ventyx for use in the modeling. These prices reflect conditions in the market expected to be experienced by Empire and use the most recent market information available. Market prices were

<sup>&</sup>lt;sup>1</sup> For example, as of July 2010, Year 1 is 2011, Year 2 is 2012, Year 3 is 2013 and Year 4 is 2014.

determined for each of the carbon tax scenarios. The projected on-peak market prices used for the modeling in this IRP are shown in Figures 3-2 and 3-3.

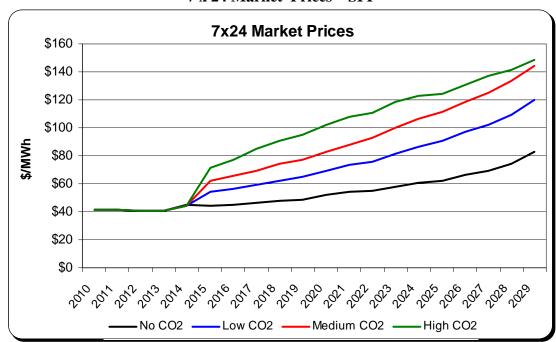
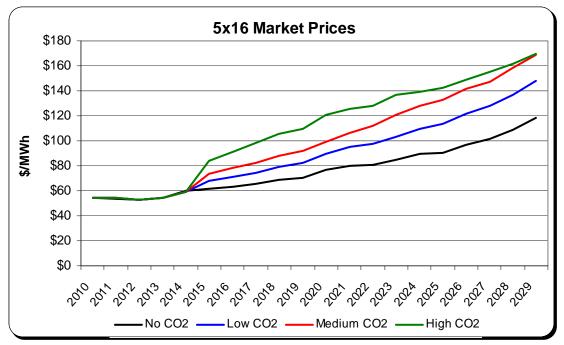


Figure 3-2 7 x 24 Market Prices – SPP

Source: Ventyx

Figure 3-3 5 x 16 Market Prices – SPP



Source: Ventyx

## 3.6 Capacity Margin

As a member of the SPP, Empire is required to maintain a minimum 12% capacity margin which is approximately equivalent to a 13.7% reserve margin. This value was used as the minimum reserve margin value for capacity planning in this IRP.

#### 3.7 Financial Parameters

Empire's discount rate used for planning purposes is 7.78%. The Gross Domestic Product (GDP) Deflator used in all of the model runs is 2.5% per year throughout the forecast period. Levelized fixed charge rates were only applied in the screening portion of the modeling (in the Capacity Expansion Module). The values used are shown in Table 3-7.

Levenzeu Fixeu Charge Nates			
Technology	Levelized Fixed Charge Rate (%)		
Combustion turbine	11.59%		
Combined cycle	11.17%		
Coal/IGCC	10.59%		
Distributed Generation	12.90%		
Biomass	12.90%		

Table 3-7Levelized Fixed Charge Rates

Levelized fixed charge rates were not applied to capital costs for the units in the MIDAS modeling since the model was used to perform a full financial analysis including accelerated depreciation, annual rate base calculations, construction S-curves, and Allowance for Funds Used During Construction (AFUDC). All present value of revenue requirements (PVRR) calculations have been expressed in 2010 dollars.

No future resource is expected to have leased or rented facilities.

## 3.8 Emission Costs

Emission costs modeled in the IRP analysis included sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and Mercury (Hg). For the base case, carbon dioxide (CO<sub>2</sub>) taxes began in 2015. Because the Clean Air Mercury Rule (CAMR) was vacated, the EPA is required to issue a new rule on how mercury is to be regulated by the end of 2011. Empire assumed a resumption of mercury emission costs and controls as of the beginning of 2015.

 $NO_x$  and  $SO_2$ , along with many other pollutants, are regulated by a number of state and federal statutes that complicates price projections for the costs of emissions, the limits on the emissions themselves, and the projected future levels of emissions. The emissions costs assumed in the analysis, reflecting a combination of state and federal requirements, are shown in Table 3-8.

$\begin{array}{c c c c c c c c c c c c c c c c c c c $		Emissions Costs – Base Environmental					
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Year	SO <sub>2</sub> (\$/ton)	NO <sub>x</sub> (\$/ton)	Hg (\$000/ton)	CO <sub>2</sub> (\$/ton)		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2015	153	1,006	40,000	21.48		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2016	162	1,035	40,000	24.12		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2017	170	1,063	40,000	27.04		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2018	177	1,090	40,000	30.09		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2019	182	1,106	40,000	32.21		
20221881,13140,00040.1920231881,13140,00043.2320241881,13140,00046.8720251881,13140,00050.1820261881,13140,00053.90	2020	186	1,120	40,000	34.66		
20231881,13140,00043.2320241881,13140,00046.8720251881,13140,00050.1820261881,13140,00053.90	2021	188	1,131	40,000	37.22		
20241881,13140,00046.8720251881,13140,00050.1820261881,13140,00053.90	2022	188	1,131	40,000	40.19		
20251881,13140,00050.1820261881,13140,00053.90	2023	188	1,131	40,000	43.23		
2026 188 1,131 40,000 53.90	2024	188	1,131	40,000	46.87		
	2025	188	1,131	40,000	50.18		
	2026	188	1,131	40,000	53.90		
2027 188 1,131 40,000 58.00	2027	188	1,131	40,000	58.00		
2028 188 1,131 40,000 62.35	2028	188	1,131	40,000	62.35		
2029 188 1,131 40,000 67.18	2029	188	1,131	40,000	67.18		

Table 3-8Emissions Costs – Base Environmental

Source: Ventyx (Hg estimate from Empire)

Four levels of  $CO_2$  regulation were examined including a case in which no  $CO_2$  regulation was enacted. Table 3-9 shows the projected  $CO_2$  costs (\$/ton) in a cap and trade system (referenced as a carbon tax in this IRP), assumed to be applicable no earlier than 2015. Because the optimization models are capable of expressly modeling allowance costs and impacts of carbon taxes, no separate environmental mitigation costs needed to be calculated for the supply-side resources enumerated in this Volume of the IRP report.

Carbon Dioxide Tax Assumptions					
	Low CO <sub>2</sub> Scenario	<b>Base CO<sub>2</sub> Scenario</b>	High CO <sub>2</sub> Scenario		
2015	12.55	21.48	27.77		
2016	13.58	24.12	30.38		
2017	15.05	27.04	35.81		
2018	16.35	30.09	40.37		
2019	18.07	32.21	43.57		
2020	19.43	34.66	48.23		
2021	21.23	37.22	51.74		
2022	22.98	40.19	55.65		
2023	25.72	43.23	60.39		
2024	28.51	46.87	65.29		
2025	30.81	50.18	69.23		
2026	33.84	53.90	73.84		
2027	36.35	58.00	79.20		
2028	38.60	62.35	85.03		
2029	40.63	67.18	90.44		

Table 3-9 Carbon Dioxide Tax Assumptions

Source: Ventyx

For the low and high CO<sub>2</sub> scenarios, changes in SO<sub>2</sub>, NO<sub>x</sub> and mercury emission allowances prices and gas, oil, and coal prices were correlated with the CO<sub>2</sub> prices. Tables 3-10 through 3-14 show the correlated price projections for all four of the carbon tax scenarios. The coal prices shown are those that would be expected for any new coalfired generation built in the future. 

Table 3-10
<b>Projected Coal Prices for Future Coal-Fired Resources – Carbon Scenarios</b>
(\$/MMBtu)

	No CO <sub>2</sub>	Low CO <sub>2</sub>	Base CO <sub>2</sub>	High CO <sub>2</sub>
	Scenario	Scenario	Scenario	Scenario
2017	2.34	2.30	2.13	1.95
2018	2.46	2.40	2.17	1.95
2019	2.57	2.49	2.22	1.95
2020	2.70	2.59	2.28	1.93
2021	2.84	2.70	2.33	1.93
2022	3.03	2.84	2.40	1.97
2023	3.22	2.95	2.46	2.09
2024	3.46	3.10	2.52	2.25
2025	3.70	3.25	2.58	2.42
2026	4.03	3.43	2.66	2.62
2027	4.19	3.47	2.72	2.72
2028	4.32	3.49	2.81	2.81
2029	4.45	3.51	2.89	2.89

Source: Ventyx

**Table 3-11** 

Projected Oil Prices – Carbon Scenarios (\$/MMBtu)					
	No CO <sub>2</sub>	Low CO <sub>2</sub>	Base CO <sub>2</sub>	High CO <sub>2</sub>	
	Scenario	Scenario	Scenario	Scenario	
2015	22.29	22.97	25.21	27.20	
2016	23.31	24.23	27.20	29.34	
2017	24.01	25.30	29.04	32.13	
2018	24.66	26.32	30.93	34.52	
2019	25.18	27.38	32.38	36.23	
2020	25.51	28.16	33.71	37.89	
2021	25.80	29.08	35.03	39.01	
2022	25.92	29.83	36.22	39.66	
2023	26.17	31.15	37.55	39.26	
2024	26.34	32.43	38.81	39.51	
2025	26.68	33.76	40.06	40.06	
2026	27.23	35.67	41.49	41.49	
2027	28.03	37.72	43.03	43.03	
2028	29.88	41.13	44.82	44.82	
2029	31.11	43.65	46.66	46.66	

noted Oil Dri Carbon Sama ing (\$/MMDtu)

Source: Ventyx

	No CO <sub>2</sub>	Low CO <sub>2</sub>	Base CO <sub>2</sub>	High CO <sub>2</sub>
	Scenario	Scenario	Scenario	Scenario
2015	170	171	153	134
2016	189	189	162	138
2017	212	209	170	127
2018	240	233	177	111
2019	264	251	182	106
2020	296	275	186	118
2021	336	304	188	135
2022	400	350	188	160
2023	470	388	188	188
2024	470	362	188	188
2025	470	339	188	188
2026	470	305	188	188
2027	470	274	188	188
2028	470	244	188	188
2029	470	214	188	188

Table 3-12Projected SO2 Allowance Prices (\$/ton)

Source: Ventyx, Based on 2009 Fall Reference Case

**Table 3-13** 

Projected Annual NO <sub>x</sub> Allowance Prices (\$/ton)					
	No CO <sub>2</sub>	Low CO <sub>2</sub>	Base CO <sub>2</sub>	High CO <sub>2</sub>	
	Scenario	Scenario	Scenario	Scenario	
2015	1,083	1,083	1,006	914	
2016	1,155	1,149	1,035	925	
2017	1,243	1,227	1,063	871	
2018	1,352	1,321	1,090	821	
2019	1,438	1,386	1,106	776	
2020	1,548	1,472	1,120	681	
2021	1,682	1,567	1,131	617	
2022	1,850	1,686	1,131	541	
2023	2,069	1,810	1,131	446	
2024	2,414	2,009	1,131	483	
2025	2,836	2,251	1,131	567	
2026	3,483	2,573	1,131	697	
2027	4,489	3,098	1,131	898	
2028	5,072	3,251	1,131	1,014	
2029	5,655	3,404	1,131	1,131	

**Projected Annual NO<sub>x</sub> Allowance Prices (\$/ton)** 

Source: Ventyx, Based on 2009 Fall Reference Case

	Projected Mercury Anowance Prices (\$000/ton)					
	No CO <sub>2</sub>	Low CO <sub>2</sub>	Base CO <sub>2</sub>	High CO <sub>2</sub>		
	Scenario	Scenario	Scenario	Scenario		
2015	41,159	40,974	40,000	39,153		
2016	41,521	41,246	40,000	39,140		
2017	41,942	41,522	40,000	38,827		
2018	42,391	41,828	40,000	38,724		
2019	42,701	41,934	40,000	38,708		
2020	43,051	42,108	40,000	38,712		
2021	43,398	42,210	40,000	38,903		
2022	43,767	42,325	40,000	39,230		
2023	44,093	42,245	40,000	39,519		
2024	44,397	42,125	40,000	37,294		
2025	44,575	41,957	40,000	37,443		
2026	44,645	41,593	40,000	37,502		
2027	44,715	41,324	40,000	37,560		
2028	44,785	41,111	40,000	37,619		
2029	47,619	43,470	40,000	40,000		
C F	· · · · · · / <b>\</b> / · · · · · · · · · · · · · · · · · ·					

31

 Table 3-14

 Projected Mercury Allowance Prices (\$000/ton)

Source: Empire/Ventyx

#### 4.0 New Conventional Resources

Future supply-side resources available to Empire over the twenty-year planning horizon include both conventional and renewable resources. The conventional resources considered in the IRP are described in this Section of the report. The renewable resources considered in the IRP are described in Section 5.0.

A variety of conventional resources were examined in the course of preparing this IRP. These resources included supercritical coal, CT, CC, nuclear (PPA only), distributed generation, integrated gasification combined cycle (IGCC), and the conversion of Riverton 12 from a CT to CC. The capital costs modeled for each resource option include only generic costs for new transmission required; not those costs expected at any specific location due to the current methods that the SPP uses to plan and cost out new transmission projects. Costs are included for the switching station at the power plant. O&M costs for any future power plant is significantly overshadowed by the uncertainty related to any of natural gas prices, market prices, and the level of carbon taxes. Thus, the uncertainty associated with O&M costs is not considered further in this IRP.

#### 4.1 Supercritical Coal

In a supercritical coal unit, chunks of coal are crushed into fine powder in the pulverizers and are fed into a combustion unit (boiler or furnace) where it is burned. Heat from the burning coal is used to generate steam that is used to spin one or more turbines to generate electricity. Coal units currently generate about half of the electricity produced annually in the U.S.

As modeled, the coal option available to Empire represents its ownership share of a larger unit. As larger units benefit from economies of scale, this modeling choice was made to ensure Empire was able to take advantage of the cost effectiveness represented by the larger units. However, the actual timing and ownership share of units that Empire might be able to participate in will be dependent on plans of other utilities in the region and are expected to be largely out of Empire's control. The data used in the modeling are shown in Table 4-1.

Cost and emission data are based on information from a supercritical coal unit currently under construction in the region. Supercritical coal units with carbon capture and sequestration are not assumed to be commercially viable within the planning horizon modeled in this IRP. Costs were developed for a coal unit equipped with CCS prior to making a judgment on the earliest feasible year of installation. The data are presented to show the estimated cost and efficiency differences between a traditional coal-fired unit and one equipped with CCS.

Parameter	No CCS	With CCS	PPA – No CCS
Earliest feasible year of installation	2020	Outside of	2017
		planning	
		horizon	
Size, MW (net)	50*	50*	50*
Full load heat rate, Btu/kWh	9,220	11,986	9,220
Lead time, months	60	60	
Capital cost, \$/kW (2010 \$)	2,400	4,591	-
Fixed O&M, \$/kW-year	27.53	32.15	363.29
Variable O&M, \$/MWh	4.59	6.15	4.59
Equivalent Forced Outage Rate, %	6.0	7.0	6.0
Maintenance Outage Rate, %	6.5	7.5	6.5
SO <sub>2</sub> Emissions, lbs/MMBtu	0.03	0.03	0.03
NO <sub>x</sub> Emissions, lbs/MMBtu	0.05	0.05	0.05
CO <sub>2</sub> Emissions, lbs/MMBtu	210	21	210
Mercury Emissions, lbs/MMBtu	0.001	0.001	0.001
*Ownership share of a larger unit.			

 Table 4-1

 Supercritical Coal Performance Parameters

With the assumption that carbon dioxide  $(CO_2)$  may eventually be regulated (either cap and trade or a tax) with an associated requirement to significantly reduce  $CO_2$  emissions in the future, CCS may need to be proven as a viable technology in order for coal-fired generation to continue to be a future new resource option. As part of its efforts to examine CCS, Empire is one of the five electric utilities participating in the Missouri Carbon Sequestration Project (MCSP). This project is researching the feasibility of shallow carbon sequestration within geologic formations in Missouri.

Phase I of the MCSP has been completed and funds to move the project into its second phase were announced in April 2010. Carbon capture is currently under development. Because carbon sequestration is the other component necessary for successful CCS, the Missouri utilities are supporting research efforts to determine feasibility.

Other utility participants include AmerenUE, Associated Electric Cooperative, City Utilities of Springfield, and KCP&L. Research members of the project include City Utilities of Springfield, Missouri Department of Natural Resources, Missouri State University, and Missouri University of Science & Technology. Supporting Organizations include Missouri Energy Development Association, Missouri Public Service Commission, Missouri Public Utility Alliance, and the EPA Region VII.

## 4.2 Combustion Turbine

Combustion turbines typically burn natural gas and/or No. 2 fuel oil and are available in a wide variety of sizes and configurations. CTs are generally used for peaking and reserve purposes because of their relatively low capital costs, higher full load heat rate, and the higher cost of fuel when compared to conventional coal-fired baseload capacity. CTs,

particularly aeroderivatives, have the added benefit of providing quick-start capability in certain configurations. In this IRP, both simple cycle and aeroderivative CTs were options in the optimization modeling with data used as shown on Table 4-2. Data for capital costs for the CTs are based on manufacturers' information provided by Siemens, General Electric, and Pratt and Whitney.

Combustion Turbine Terrormance Tarameters					
Parameter	Aeroderivative CT	Simple Cycle CT			
Earliest feasible year of installation	2015	2015			
Size, MW (net)	60	115			
Full load heat rate, Btu/kWh	11,000	10,500			
Lead time, months	48	48			
Capital cost, \$/kW (2010 \$)	674	573			
Fixed O&M, \$/kW-year	10.85	13.23			
Variable O&M, \$/MWh	3.00	3.00			
Equivalent Forced Outage Rate, %	3.6	3.6			
Maintenance Outage Rate, %	4.1	4.1			
NO <sub>x</sub> Emissions, lbs/MMBtu	0.03	0.03			
CO <sub>2</sub> Emissions, lbs/MMBtu	120	120			

 Table 4-2

 Combustion Turbine Performance Parameters

#### 4.3 Combined Cycle

In a combined cycle (CC) facility, the hot exhaust gases from one or more CTs pass through a heat recovery steam generator (HRSG). The steam generated by the HRSG is expanded through a steam turbine which, in turn, drives an additional generator. Combustion turbine combined cycle systems typically burn natural gas and are available in a wide variety of sizes and configurations. In Empire's IRP, two CC options were available for selection: 1) a new unsited CC facility, and 2) the conversion of the Riverton 12 CT to a CC unit. Riverton 12 can be converted into a CC unit through the addition of an HRSG and a steam turbine which would result in 100 MW of additional capacity. The Riverton12 conversion costs are based on an estimate prepared by Sega, Inc., an engineering and technical services company based in Overland Park, Kansas. The general CC unit capital costs are based on a cost estimate from a CT manufacturer plus the conversion cost estimates from Sega. CC with CCS is assumed to not be commercially viable during the planning horizon modeled for this IRP. The data used for modeling are shown on Table 4-3.

Combined Cycle I erformance I arameters					
Parameter	General	CC with CCS	Riverton 12		
	CC		Conversion		
Earliest feasible year of installation	2015	Outside of	2015		
		planning			
		horizon			
Size, MW (net)	250	250	100*		
Full load heat rate, Btu/kWh	7,500	9,750	7,500		
Lead time, months	48	48	48		
Capital cost, \$/kW (2010 \$)	720	1,584	1,253		
Fixed O&M, \$/kW-year	12.48	22.10	12.48		
Variable O&M, \$/MWh	2.07	3.15	2.07		
Equivalent Forced Outage Rate, %	5.50	5.50	5.50		
Maintenance Outage Rate, %	7	6	7		
NO <sub>x</sub> Emissions, lbs/MMBtu	.01	.01	.01		
CO <sub>2</sub> Emissions, lbs/MMBtu	120	12	120		
*Represents the incremental capacity of the CC unit only, not the total including the CT.					
1. Same fixed costs as currently projected	for Riverton 12	as a CT. Thus, no	additional fixed		
costs.					

Table 4-3Combined Cycle Performance Parameters

#### 4.4 Nuclear

New nuclear units are currently being pursued around the country at brownfield sites – meaning additional units are being planned at sites with operating units. New nuclear unit designs have been submitted to the U.S. Nuclear Regulatory Commission (NRC) and have received or are awaiting design approval. Small Modular Reactors (SMR) are receiving much attention and interest as well. These are new reactor designs for which each module is much smaller than the typical approximately 1,000 MW associated with the nuclear units designed and built in the 1970s and 1980s.

Although Empire is not aware of any opportunities for it to become a joint owner of a nuclear unit in the region, for purposes of the IRP, Empire considered a nuclear unit PPA as an option starting in 2025. At some point in the future, possibly within the planning horizon and possibly later than the end of the planning horizon, it is conceivable that, within the region, one or more new nuclear units could be pursued as an additional unit at an existing nuclear power plant site.

The IRP modeling assumes that Empire would participate in a PPA with the owner of a new nuclear unit. However, the actual timing and size of such a PPA will be dependent on plans of other utilities in the region and are expected to be largely out of Empire's control.

Nuclear PPA Performance Parameters		
Parameter	Value	
Earliest feasible year of installation	2025	
Size, MW (net)	50*	
Full load heat rate, Btu/kWh	10,300	
PPA cost, \$/kW-year	1035.74	
Variable O&M, \$/MWh	0.49	
Equivalent Forced Outage Rate, %	3.8	
Maintenance Outage Rate, %	6.2	
Emissions	None	
*Represents share of a larger jointly-owned u	nit.	

 Table 4-4

 Nuclear PPA Performance Parameters

#### 4.5 Distributed Generation

Distributed generation (DG) refers to small-scale power plants that differ from traditional electricity supply due to their small size, location, and grid connection. DGs are located at or near the point at which the power is used. Such installations relieve congestion in power lines during periods of peak demand, helping to defer investments in additional transmission and distribution capacity. DG facilities are often installed on the distribution system as opposed to on the transmission system, where generation is typically connected. DG facilities may also be used to boost the quality and reliability of local electricity service by providing voltage control and backup power to customers who require such "premium" service. Data used to model distributed generation are shown in Table 4-5.

Parameter	Value
Earliest feasible year of installation	2014
Size, MW (net)	5
Full load heat rate, Btu/kWh	10,000
Lead time, months	12
Capital cost, \$/kW (2010 \$)	1,404
Fixed O&M, \$/kW-year	16.03
Variable O&M, \$/MWh	7.12
Equivalent Forced Outage Rate, %	0
Maintenance Outage Rate, %	0

 Table 4-5

 Distributed Generation Performance Parameters

## 4.6 Integrated Gasification Combined Cycle (IGCC)

Coal gasification is a process that converts solid coal into a synthetic gas composed mainly of carbon monoxide and hydrogen. Integrated gasification combined cycle (IGCC) combines both steam and gas turbines ("combined cycle"). The fuel gas leaving the gasifier must be cleaned (to very high levels of removal efficiencies) of sulfur compounds and particulates in order to be a suitable fuel for combustion. After the fuel gas has been cleaned, it is burned and expands in a gas turbine. Steam is generated and superheated in both the gasifier and the heat recovery unit downstream from the gas turbine. The flue gas is then directed through a steam turbine to produce electricity. IGCC plants can achieve up to 45 percent efficiency depending on the level of integration of the various processes, greater than 99 percent SO<sub>2</sub> removal, and NO<sub>x</sub> below 50 parts per million.<sup>2</sup> The analysis assumes that Empire would participate in a share of a larger jointly-owned unit. Data used to model IGCC are shown in Table 4-7.

IGCC Performance Parameters		
Parameter	Value	
Earliest feasible year of installation	2020	
Size, MW (net)	50*	
Full load heat rate, Btu/kWh	9,300	
Lead time, months		
Capital cost, \$/kW (2010 \$)	2437	
Fixed O&M, \$/kW-year	38.67	
Variable O&M, \$/MWh	2.92	
Equivalent Forced Outage Rate, %	6.0	
Maintenance Outage Rate, %	6.5	
SO <sub>2</sub> Emissions, lbs/MMBtu	.02	
NO <sub>x</sub> Emissions, lbs/MMBtu	.01	
CO <sub>2</sub> Emissions, lbs/MMBtu	210	
Mercury Emissions, lbs/MMBtu	.0005	
*Represents a share of a larger jointly-owned unit.		

# Table 4-6 IGCC Performance Parameters

IGCC with CCS is assumed to not be commercially viable during the planning horizon modeled for this IRP.

<sup>&</sup>lt;sup>2</sup> Source: "Clean Coal Technologies for Developing Countries," World Bank Technical Paper No. 286, Energy Series, E. Stratos Tavoulareas and Jean-Pierre Charpentier, July 1995. <u>http://www.worldbank.org/html/fpd/em/power/EA/mitigatn/igccsubs.stm</u>, accessed May 2006.

#### 5.0 New Renewable Resources

The regulatory requirements for renewable resources in certain of Empire's jurisdictions are discussed first in the section on Renewable Portfolio Standards. The second section contains a discussion of the renewable resources considered in this IRP.

#### 5.1 Renewable Portfolio Standards

Renewable Portfolio Standards (RPS) or Renewable Energy Standards have been established by the voters or the legislature in Missouri, Kansas, and Oklahoma. The requirements for each are provided below.

## 5.1.1 RPS – Missouri

The RPS (Proposition C) approved by the voters during the November 4, 2008 election, and currently undergoing rulemaking at the MPSC, mandates percentages of an electric utility's sales that are to be provided by renewable energy resources by the dates shown in Table 5-1. The RPS further requires that a specific percentage be provided by solar energy unless a utility is exempted. Renewable energy resources as approved by the voters and as defined in the proposed rules in Docket EX-2010-0169 (July 1, 2010, as posted in the August 16, 2010 *Missouri Register*) are:

- Wind
- Solar, including solar thermal sources utilized to generate electricity, photovoltaic cells, or photovoltaic panels
- Dedicated crops grown for energy production
- Cellulosic agricultural residues
- Plant residues
- Methane from landfills or wastewater treatment
- Clean and untreated wood, such as pallets
- Hydropower (not including pumped storage) that does not require a new diversion or impoundment of water and that has generator nameplate ratings of ten (10) MW or less
- Fuel cells using hydrogen produced by any of the renewable energy resources shown in the list above
- Other sources of energy not including nuclear that become available after November 4, 2008, and are certified as renewable by the department [Missouri Department of Natural Resources].

A multiplier of 1.25 will apply to all in-state resources (meaning that each 1 kWh of renewable energy generated within Missouri will count as 1.25 kWh for purposes of determining compliance with the Missouri RPS).

Table 5-1Missouri Renewable Portfolio Standard

Dates	<b>RES Percentage (no less than)</b>	
2011-2013	2	
2014-2017	5	
2018-2020	10	
Beginning in 2021	15	
Notes:		
1. Percentage of an electric utility's sales.		
2. Some or all of the requirement may be satisfied by the purchase of Renewable Energy Credits (REC).		

3. Each kWh of eligible energy generated within Missouri will count as 1.25 kWh.

As of January 20, 2009, Empire had renewable energy resource aggregate nameplate capacity equal to or greater than 15% of its fossil-fired generating capacity.

Empire Renewable Resources			
Name of Resource	Type of Resource	Nameplate (MW)	
Ozark Beach	Hydroelectric	4 units – 16 MW total	
Elk River	Wind	150*	
Meridian Way	Wind	105*	
TOTAL RENEWABLE		271	
Total 2010 Fossil-Fired		1241	
Capacity			
% of Total represented by		21.8%	
Renewables			
*Represents the nameplate capacity for these facilities. Actual rated capacity is 7 MW and 8 MW,			
respectively.			

Table 5-2 Empire Renewable Resources

## 5.1.2 RPS – Kansas

The state legislature passed HB 2369 in 2009 establishing an RPS in Kansas. The rulemaking process at the Kansas Corporation Commission related to the RPS is ongoing. Utilities are required to generate or purchase a certain amount of their electricity peak demand for Kansas-only customersfrom eligible renewable resources as shown in Table 5-3.

Kansas Renewable Portfolio Standard		
Years	Percentage of Utility Peak Capacity Demand	
2011-2015	10%	
2016-2019	15%	
2020 and onward 20%		
Note: % calculated based on the average demand of the prior three years		

Table 5-3 Kansas Renewable Portfolio Standard

Renewable energy resources are defined by the statute to include:

- Wind
- Solar thermal sources
- Photovoltaic cells and panels
- Dedicated crops grown for energy production
- Cellulosic agricultural residues
- Plant residues
- Methane from landfills or from wastewater treatment
- Clean and untreated wood products such as pallets
- Existing hydropower
- New hydropower, not including pumped storage, that has a nameplate rating of 10 MW or less
- Fuel cells using hydrogen produced by one of the above-named renewable energy resources
- Other sources of energy, not including nuclear power, that become available after the legislation becomes effective, and that are certified as renewable by rules and regulations of the Kansas Corporation Commission.

Renewable resources installed in Kansas qualify for a 1.1 multiplier for the purpose of compliance. The RPS will apply to all power sold to Kansas retail customers whether the power they consume is generated or purchased inside or outside of the state.

## 5.1.3 RPS – Oklahoma

In May 2010, Oklahoma enacted HB 3028 that established a renewable energy goal for electric utilities operating in the state. The goal is "that 15% of all installed capacity of electricity generation within the state by the year 2015 be generated from renewable energy sources." Qualifying renewable energy resources include:

- Wind
- Solar
- Photovoltaic
- Hydropower
- Hydrogen
- Geothermal
- Biomass, including agricultural crops, wastes, and residues, wood, animal and other degradable organic wastes, municipal solid waste, and landfill gas
- Distributed generation from an eligible renewable energy resource less than 5 MW
- Other renewable energy resources approved by the Commission
- Demand-side management and energy efficiency.

NP

The percentage of renewable energy shall be determined by dividing all installed capacity of renewable electricity generation in Oklahoma by the total installed capacity of all electricity generation in Oklahoma.

Empire has no electric generating resources in Oklahoma.

## 5.2 Renewable Resources

Empire examined a range of renewable resources in this IRP. These include wind, biomass (chicken/turkey waste, landfill gas and others), and solar (PV and solar thermal). Empire currently burns fuel derived from tires at its Asbury station. Empire purchases wind energy from Elk River Windfarm, LLC, whose wind generation facility (Elk River Windfarm) is near Beaumont, Kansas. Empire also purchases wind energy from Cloud County Wind Farm, LLC (the Meridian Way Wind Farm) in Cloud County, Kansas.

## 5.2.1 Wind

Wind energy systems for utility applications transform the kinetic energy of the wind into electrical energy. Horizontal-axis turbines (propeller-style machines) are the most common wind turbine configuration today, constituting almost all of the utility-scale (greater than 100 kW) applications. Figure 5-1 shows this typical wind turbine configuration.

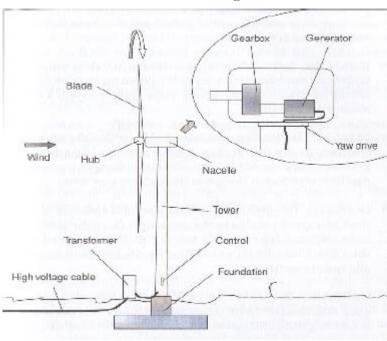


Figure 5-1 Wind Turbine Configuration

Turbine subsystems include:

• A rotor, or blades, that convert the wind's energy into rotational shaft energy

- A nacelle (enclosure) containing a drive train, usually including a gearbox (not all • turbines require a gearbox) and a generator
- A tower to support the rotor and drive train
- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.<sup>3</sup>

The American Wind Energy Association (AWEA) reported as of mid-2010 that the U.S. had 36,303 MW of installed wind energy capacity. The top fifteen states as reported by AWEA as of mid-2010 are shown in Table 5-4.

lled Wind Energy Capacity in the U.S. (July			
State	<b>Installed Capacity</b>	Rank	
	( <b>MW</b> )		
Texas	9,707	1	
Iowa	3,670	2	
California	2,739	3	
Oregon	1,920	4	
Washington	1,914	5	
Illinois	1,848	6	
Minnesota	1,797	7	
New York	1,274	8	
Colorado	1,248	9	
North Dakota	1,222	10	
Oklahoma	1,130	11	
Indiana	1,127	12	
Wyoming	1,101	13	
Kansas	1,026	14	
Pennsylvania	748	15	

Table 5-4 Installed Wind Energy Canacity in the U.S. (July 2010)

## 5.2.1.1 Wind – Missouri

The profile of wind resources shown on Figure 5-2 reveals that Class 3 or lower wind resources exist in Empire's Missouri service territory. Generally wind resources need to be at least Class 3 (the highest wind ranking is Class 7) in order to be considered suitable for wind energy development. This map shows some suitable resources in the Ozark Plateau. Wind resource maps from other sources have indicated that the northwest corner of the State has the highest class wind rankings.<sup>4</sup> The resources that AWEA reports to be on-line in Missouri are shown in Table 5-5.

NP

<sup>&</sup>lt;sup>3</sup> Figure, general information and state project information from web site of the American Wind Energy Association www.awea.org.

<sup>&</sup>lt;sup>4</sup> Figure 3-44, "Missouri annual average wind power," Wind Energy Resource Atlas of the United States, http://rredc.nrel.gov/wind/pubs/atlas/maps/chap3/3-44m.html.

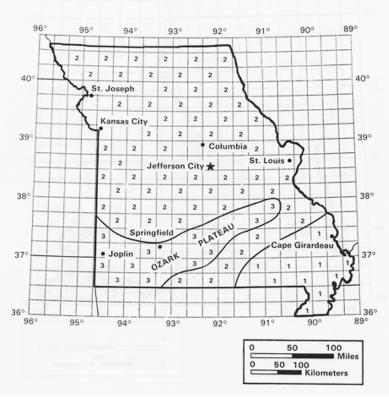
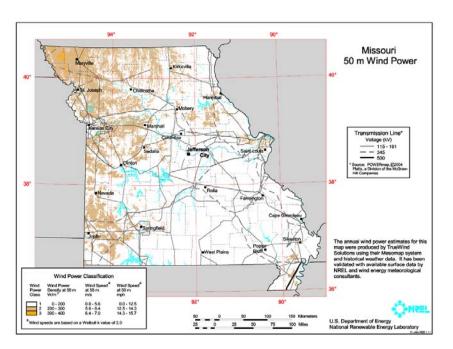


Figure 5-2(a) Wind Resources in Missouri

Figure 5-2(b) Wind Resources in Missouri



Year of	Size	Name	Developer	Utility Purchaser
Operation	(MW)			
2007	56.7	Bluegrass Ridge Wind	Wind Capital	Associated
		energy project	Group/John Deere	Electric
			Capital	Cooperative
				(AECI)
2008	5	Loess Hills Wind	Wind Capital	Missouri Joint
		Energy Center	Group/John Deere	Municipal Electric
			Capital	Utility
				Commission
2008	50.4	Cow Branch Wind	Wind Capital	AECI
		Energy Center	Group/John Deere	
			Capital	
2008	50.4	Conception Wind	Wind Capital	AECI
		Project	Group/John Deere	
			Capital	
2009	146	Farmers City	Iberdrola	
		-	Renewables	
2010	148.5	Lost Creek Ridge	Wind Capital	AECI
		Wind Farm	Group	

Table 5-5Wind Energy Projects in Missouri

## 5.2.1.2 Wind – Kansas

The American Wind Energy Association ranks Kansas third in the nation (behind North Dakota and Texas) in potential wind energy production. The resource map in Figure 5-3(a) and (b) shows the Class 3 and 4 wind resources in Kansas.<sup>5</sup> The resources that AWEA reports to be on-line in Kansas are shown in Table 5-6.

<sup>&</sup>lt;sup>5</sup> Figure 3-42, "Kansas annual average wind power," Wind Energy Resource Atlas of the United States, <u>http://rredc.nrel.gov/wind/pubs/atlas/maps/chap3/3-42m.html</u>.

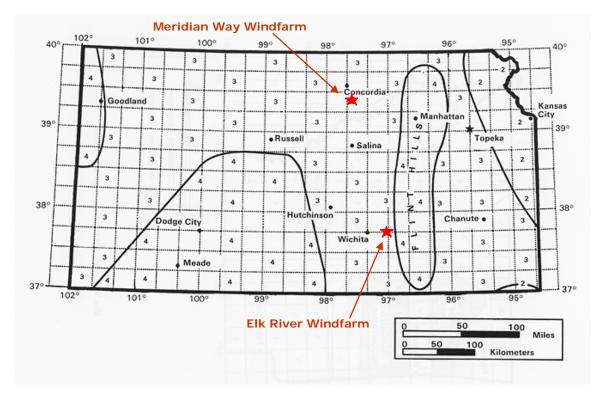
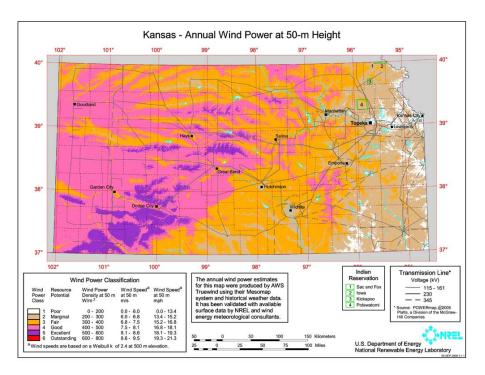


Figure 5-3(a) Kansas Wind Resource Map

Figure 5-3(b) Kansas Wind Resource Map



White Energy 110 jects in Kansas				
Year of	Size	Name	Developer	Utility Purchaser
Operation	(MW)			
1999	1.5	St. Mary's	Western Resources	Western Resources
2001	112.2	Gray County Wind	FPL Energy	Aquila
		Farm		
2005	150	Elk River Wind Farm	PPM Energy <sup>1</sup>	Empire
2006	100.5	Spearville Wind	Kansas City Power	Kansas City Power
		Energy Facility	& Light	& Light
2008	100.8	Smoky Hills Wind	Tradewind Energy	Sunflower
		Farm		Electric/Midwest
				Energy/BPU
2008	148.5	Smoky Hills II	Tradewind Energy	
2008	96	Meridian Way	Horizon Wind	Westar
			Energy	
2008	105	Meridian Way II	Horizon Wind	Empire
			Energy	
2009	100	Flat Ridge Wind Farm	BP Alternative	Westar
			Energy/Westar	
2009	99	Central Plains	Westar	Westar
2010	12.5	Greensburg	John Deere Wind	
1. Elk River Wind Farm is now owned by Iberdrola Renewables.				

Table 5-6Wind Energy Projects in Kansas

## 5.2.1.3 Wind – Oklahoma

Oklahoma ranks eighth nationwide in potential wind energy production with most Class 3 and higher wind resources located in the western portion of the state. The resource map in Figure 5-4(a) and (b) shows the Class 3 and 4 wind resources in Oklahoma.<sup>6</sup> The resources that AWEA reports to be on-line and under construction in Oklahoma are shown in Table 5-7.

<sup>&</sup>lt;sup>6</sup>Figure 3-45, "Oklahoma annual average wind power," Wind Energy Resource Atlas of the United States, <u>http://rredc.nrel.gov/wind/pubs/atlas/maps/chap3/3-45m.html</u>.

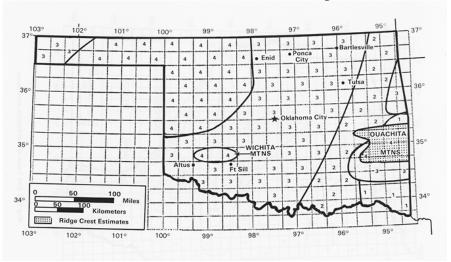
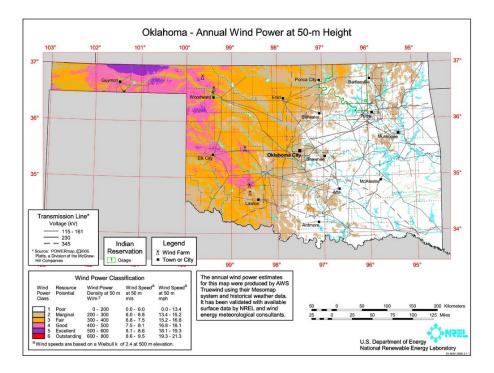


Figure 5-4(a) Oklahoma Wind Resource Map

Figure 5-4(b) Oklahoma Wind Resource Map



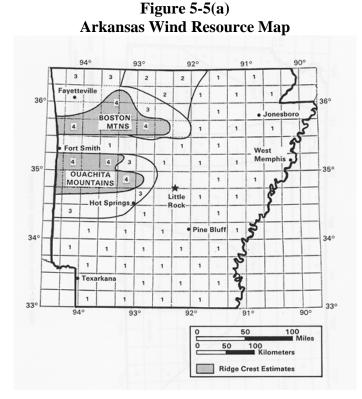
NP

Year of Operation	Size (MW)	Name	Developer	Utility Purchaser
-		Opera	tional	
2003	102	Oklahoma Wind Power Center	FPL Energy	Oklahoma Municipal Power Authority; Oklahoma Gas & Electric
2003	74.25	Blue Canyon Wind Power	Consortium	Western Farmers Electric Coop
2005	147	Weatherford Wind Energy Center	FPL Energy	Public Service Company of Oklahoma (AEP)
2005	0.05	Bergey Windpower Headquarters	Bergey Windpower	Bergey Windpower Headquarters
2005	151.2	Blue Canyon II	Horizon Wind Energy	Public Service Company of Oklahoma (AEP)
2006	60	Centennial Wind Energy Project	Invenergy	Oklahoma Gas & Electric (OG&E)
2007	94.5	Sleeping Bear	Chermac Energy Corp/Edison Mission Group	Public Service Company of Oklahoma (AEP)
2007	60	Centennial Wind Energy Project	Chermac Energy/Invenergy	OG&E
2008	123	Red Hills	Acciona	
2008	18.9	Buffalo Bear	Edison Mission Group	Western Farms Electric Coop
2009	34.5 + 64.5	Blue Canyon V	Horizon-EDPR	Public Service Company of Oklahoma (AEP)
2009	98.9	Elk City	NextEra Energy Resources	
2009	101.2	OU Spirit	CPV/OG&E	OG&E
	151.0	Under Co		
	151.8	Keenan II	CPV Renewable Energy	OG&E
	99.2	Minco Wind	NextEra Energy Resources	
	129.6	Taloga	Edison Mission Group	OG&E

Table 5-7Wind Energy Projects in Oklahoma

#### 5.2.1.4 Wind – Arkansas

The resource map in Figure 5-5(a) and (b) shows the Class 3 and 4 wind resources in Arkansas.<sup>7</sup> Only one very small wind resource is reported to be operational by AWEA, 0.1 MW at the Bitworks Prairie Grove Industrial Park. AWEA reports no proposed projects.



<sup>&</sup>lt;sup>7</sup> Figure 3-41, "Arkansas annual average wind power," Wind Energy Resource Atlas of the United States, <u>http://rredc.nrel.gov/wind/pubs/atlas/maps/chap3/3-41m.html</u>.

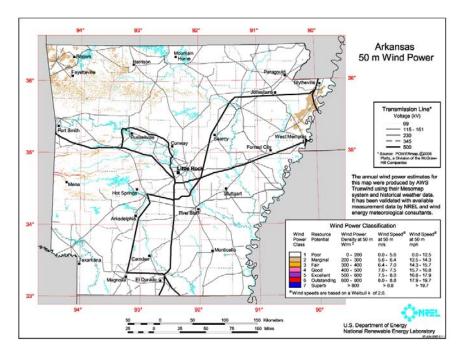


Figure 5-5(a) Arkansas Wind Resource Map

The SPP has certified the capacity that Empire counts for both Elk River (7 MW) and Meridian Way (8 MW). For purposes of planning in the IRP, 5% of the nameplate of any new wind resource counts toward the capacity margin calculation.

Wind performance parameters are shown in Table 5-8.

Wind Performance Parameters		
Parameter	PPA	
Earliest feasible year of installation	2017	
Size, MW (net)	100	
Energy Cost, \$/MWh (2010 \$)*	59	
Fixed O&M, \$/kW-year	-	
Variable O&M, \$/MWh (wind regulation only)	5.13	
Equivalent Forced Outage Rate, %	-	
Capacity Factor, %	43	
*Production tax credit assumed to expire in 2012 which results in an		
adjustment to the energy cost.		

Table 5-8Wind Performance Parameters

## 5.2.2 Biomass

Biomass electric generation is currently the largest source of renewable energy that is not hydroelectric in the U.S. Biomass means any plant-derived organic matter available on a renewable basis including dedicated energy crops and trees, agricultural food and feed

crops, agricultural crop wastes and residues, wood wastes and residues, aquatic plants, animal wastes, municipal wastes and other waste materials. Waste energy consumption generally falls into categories that include municipal solid waste, landfill gas, and other. Other biomass includes agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids, and gases. Biofuels being developed from biomass resources include ethanol, methanol, biodiesel, Fischer-Tropsch diesel, and gaseous fuels such as hydrogen and methane.<sup>8</sup>

Biomass resources available in Missouri, as reported by the National Renewable Energy Laboratory, are shown on Figure 5-6. For the sixteen counties<sup>9</sup> that comprise the Empire service territory, the biomass resource potential is quite small.

## 5.2.2.1 Biomass – Chicken/Turkey Waste

Chicken and/or turkey wastes represent a form of biomass that is prevalent in Empire's service territory. Research on studies conducted for facilities in states outside of Missouri concluded that the cost of power from such a facility would be about 8 cents/kWh and that the heat content of the fuel (chicken or turkey waste mixed with a wood waste product) would be 5,000 to 7,000 Btu/lb.<sup>10</sup>

## 5.2.2.2 Biomass – Landfill Gas

The U.S. Energy Information Administration describes landfill gas as follows<sup>11</sup>:

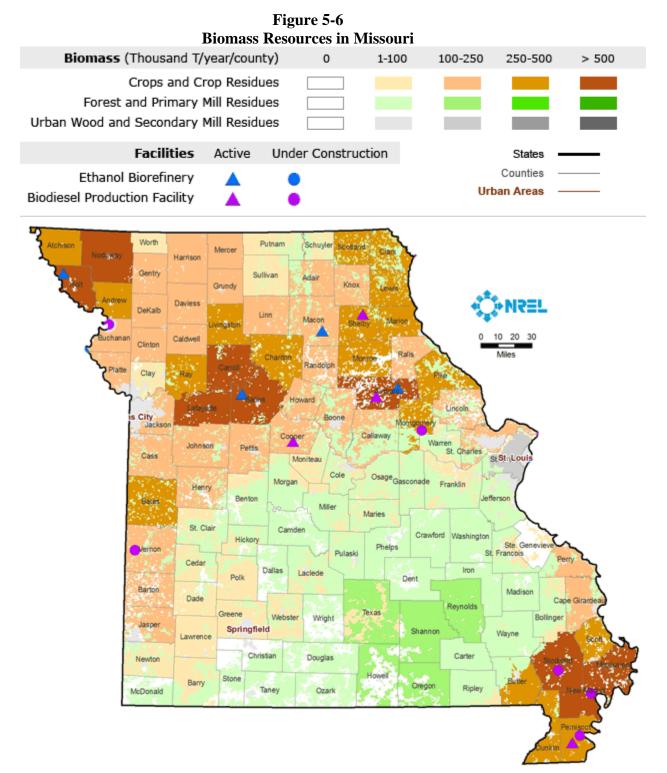
Municipal solid waste contains significant portions of organic materials that produce a variety of gaseous products when dumped, compacted, and covered in landfills. Anaerobic bacteria thrives in the oxygen-free environment, resulting in the decomposition of the organic materials and the production of primarily carbon dioxide and methane. Carbon dioxide is likely to leach out of the landfill because it is soluble in water. Methane, on the other hand, which is less soluble in water and lighter than air, is likely to migrate out of the landfill. Landfill gas energy facilities capture the methane (the principal component of natural gas) and combust it for energy.

<sup>&</sup>lt;sup>8</sup> U.S. Department of Energy, Energy Efficiency and Renewable Energy, "Biomass Topics," <u>http://www.eere.energy.gov/RE/biomass.html</u>.

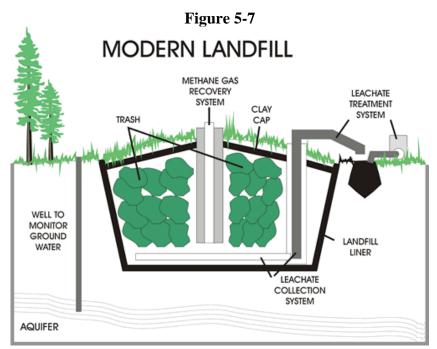
<sup>&</sup>lt;sup>9</sup> Barry, Barton, Cedar, Christian, Dade, Dallas, Greene, Hickory, Jasper, Lawrence, McDonald, Newton, Polk, St. Clair, Stone, and Taney.

<sup>&</sup>lt;sup>10</sup> Missippi\_band\_choctaw\_tep\_nov03.pdf.

<sup>&</sup>lt;sup>11</sup> "Landfill Gas," U.S. Department of Energy – Energy Information Administration, <u>http://www.eia.doe.gov/cneaf/solar.renewables/page/landfillgas/landfillgas.html</u>.

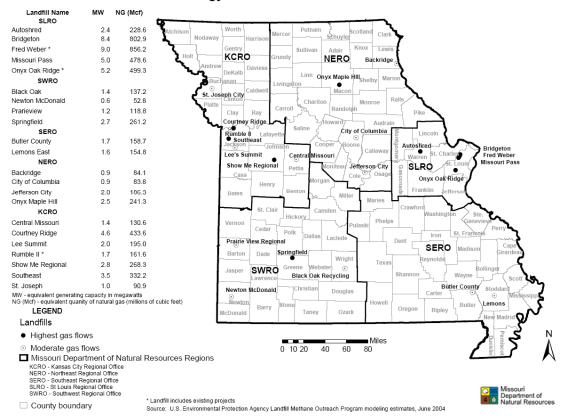


Source: National Renewable Energy Laboratory



Source: The National Energy Education Project

Figure 5-8



Landfill Gas Energy Potential Based on 2005-2014 Minimum Gas Flows

#### 5.2.2.3 Biomass – Additional Biomass

Additional biomass has been interpreted by Empire to mean wood waste and municipal solid waste. The U.S. Department of Energy – Energy Information Administration reports that wood waste, consisting of forest lands, private land clearing, urban tree and landscape residues, manufacturing and wood processing wastes, as well as construction and demolition debris can serve as a source of fuel to generate electricity. Municipal solid waste (garbage) can be sorted and the combustible products that are not recycled can be used to generate electricity.

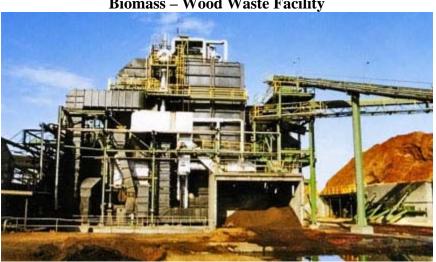


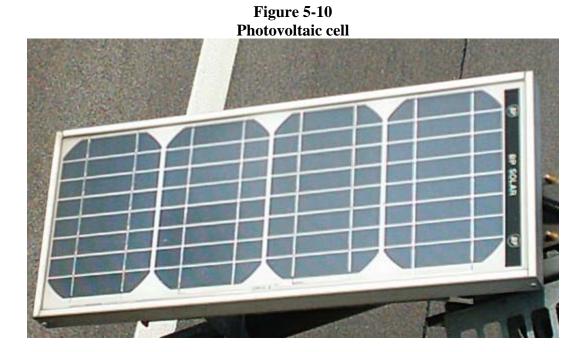
Figure 5-9 Biomass – Wood Waste Facility

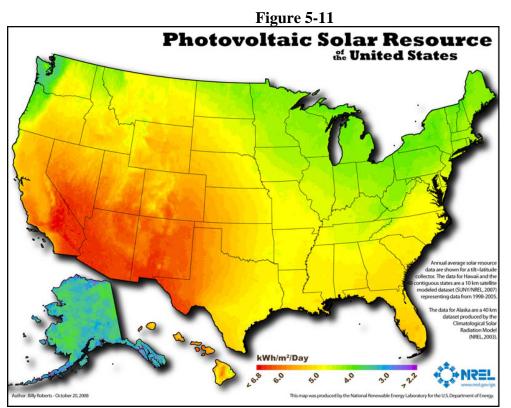
The biomass characteristics modeled in the optimization planning are shown on Table 5-9.

Biomass Performance Parameters		
Parameter	Value	
Earliest feasible year of installation	2015	
Size, MW (net)	5	
Full load heat rate, Btu/kWh	10,000	
Capital cost, \$/kW (2010 \$)	3766	
Fixed O&M, \$/kW-year	64.45	
Variable O&M, \$/MWh	6.71	
Equivalent Forced Outage Rate, %	5	
SO <sub>2</sub> Emissions, lbs/MMBtu	0.01	
NO <sub>x</sub> Emissions, lbs/MMBtu	0.01	
CO <sub>2</sub> Emissions, lbs/MMBtu	210	

Table 5-9Biomass Performance Parameters

The solar radiation that comes from the sun can be harnessed and converted to electricity in two primary ways: solar photovoltaics (solar PV) and concentrating solar power (CSP). PVs or solar cells change sunlight directly into electricity. A typical PV cell is shown in Figure 5-10. The potential for PV applications as reported by the National Renewable Energy Laboratory is shown in Figure 5-11.





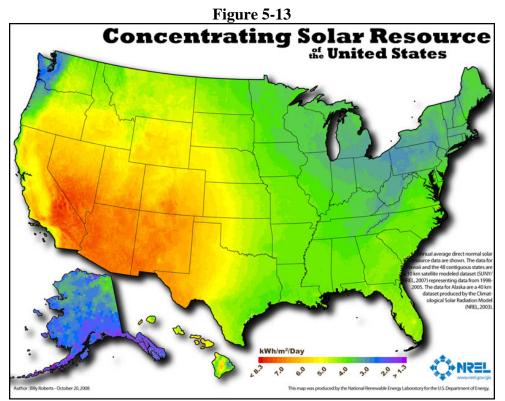
Source: National Renewable Energy Laboratory

Concentrating solar power (CSP) is one of the technologies classified as solar thermal. Any solar thermal technology involves a process where the solar energy is used to heat a fluid thereby creating steam that drives a turbine to generate electricity. The existing CSP facilities in the U.S. are found in California, Arizona, and Nevada. An example of a CSP facility is shown in Figure 5-12.

Figure 5-12 Concentrating Solar Power Facility



The potential for concentrating solar power as developed by the National Renewable Energy Laboratory is shown in Figure 5-13. Missouri has lower CSP potential than the potential for PV applications.



Source: National Renewable Energy Laboratory

Residential solar PV was considered as a potential program in the DSM analysis. It was screened out as not being cost effective. The data used for modeling solar thermal in the IRP are shown in Table 5-10.

Parameter	Solar Thermal
Earliest feasible year of installation	2015
Size, MW (net)	100
Capital cost, \$/kW (2010 \$)	5069.96
Fixed O&M, \$/kW-year	57.30

Table 5-10Solar Performance Parameters

#### 6.0 Transmission

Empire believes that at least some of the resources that will be required over the planning horizon may have significant transmission costs associated with them. Empire is a member of the Southwest Power Pool (SPP) and, as such, is now reliant on the SPP's determination of which transmission lines will be built and on what schedule. As a member of SPP, Empire is assigned a cost sharing allocation of all lines that are built in the SPP. That cost allocation varies per line.

The SPP conducts three studies directly associated with transmission planning: Large Generation Interconnect Studies, Aggregate Transmission Service Studies, and the SPP Transmission Expansion Plan (STEP). The Large Generation Interconnect Study determines all of the modifications needed to connect a new generator into the transmission system. The Aggregate Transmission Service Studies determine system upgrades required to grant transmission service from a generation source to a load. The STEP determines upgrades required for a reliable transmission system and provides a screening of potential economic projects. Until a specific line is submitted to the SPP, it is not possible to estimate what the actual cost to Empire will be. Therefore, Empire modeled a generic transmission cost adder for each alternative resource examined in this IRP.

As of January 2005, the SPP uses a Federal Energy Regulatory Commission (FERC)approved process called an Aggregate Transmission Service Study. In this process, SPP combines all long-term point-to-point and all long-term network resource transmission service requests received during a sequential four-month open season into a single aggregate transmission service study. Such an aggregated analysis should result in a more optimal expansion of the SPP transmission system than occurred previously with less aggregated analyses.

Empire actively participates in transmission planning in the SPP through committee membership, attending meetings, participation as a customer and a transmission owner in the development and implementation of all of SPP's transmission studies, and other methods. In two recent cases involving the Open Access Transmission Tariff in the SPP, Empire filed protests with the FERC. These cases involved the OATT "Highway/Byway" cost allocation methodology and the modified transmission planning process referred to as the Integrated Transmission Plan (ITP).

For the purposes of Empire's 2010 IRP, Empire did assign transmission costs on a \$/kW basis for each candidate resource examined in this IRP. The cost was \$90/kW in 2010 \$, escalating at 2.5% per year.

Empire is providing information in this IRP on future transmission projects within Empire's control area that are planned by the SPP in the STEP (see Appendices A and B). This information has been approved by the SPP Board of Directors.

Since not all of Empire's planned construction projects are accounted for in the STEP, details from Empire's 2010-2014 Construction Budget for planned transmission and distribution projects are presented in Appendix C. Empire's 2010-2014 Transmission and Construction Budget includes transmission system additions, transmission system rebuilds, distribution system additions, distribution system rebuilds, and distribution system extensions and service.

Plans for transmission projects within the SPP change frequently as conditions on utility systems, including Empire's, change.

#### 6.1 Losses

Empire works to reduce system losses in a variety of ways. One is by evaluating losses of power transformers at the time of purchase. As old transformers are replaced, newer transformers have lower levels of losses. Another is by strategically installing capacitor banks on the distribution system. In the late 1990s, Empire undertook a power factor campaign targeting installation of capacitor banks around the system. As can be seen in Table 6-1, Empire's total system losses have decreased over time – its 2008 electric system losses were less than 7% as compared to losses of over 8% in 1995.

Historical System MWh Losses <sup>12</sup>					
Year	Firm Sales (MWh)	Total Losses (MWh)	% Annual Losses	% 5-Year Rolling Average Losses	
1995	3,640,222	291,936	8.02		
1996	3,886,687	312,745	8.05		
1997	3,928,767	315,441	8.03		
1998	4,162,607	303,175	7.28		
1999	4,163,824	304,747	7.32		
2000	4,424,768	366,028	8.27	7.79	
2001	4,494,199	304,067	6.77	7.53	
2002	4,566,262	334,287	7.32	7.39	
2003	4,594,856	347,676	7.57	7.45	
2004	4,628,759	338,035	7.30	7.45	
2005	4,923,486	361,858	7.35	7.26	
2006	5,049,599	273,483	5.42	6.99	
2007	5,118,460	356,396	6.96	6.92	
2008	5,124,277	353,204	6.89	6.78	

 Table 6-1

 Historical System MWh Losses<sup>12</sup>

<sup>&</sup>lt;sup>12</sup> Management Applications Consulting, Inc. "2008 Analysis of System Losses," October 2009.

# 6.2 Smart Grid

In March 2010, Empire assembled a team to develop a pilot program that would research and test the available metering products and technologies for an advanced metering infrastructure system such as would be required for Smart Grid. The main benefits of such a system are automated meter reading, on-demand meter reads, and instant outage notification.

The team determined it would first need to visit with and learn from a number of manufacturers, vendors, and other utility companies. It was also necessary to identify the required interfaces and to then define the corporate resources needed to ensure a successful pilot implementation.

The proposed pilot program will include residential, commercial, and industrial customers, and will cover single-phase and three-phase applications. The plan is for the pilot program to implement two different communication technologies via two separate phases. The scale, location, and timeline are pending completion as of September 2010.

61

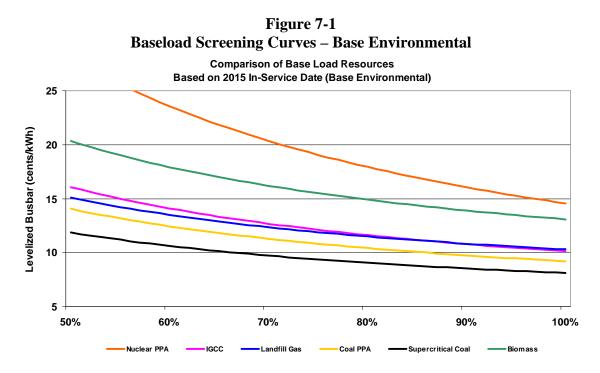
### 7.0 Screening Analysis

Two sets of screening cost curves were developed: one for base environmental costs and one for probable environmental costs. The costs are expressed in nominal dollars. The cost curves presented are for 2015 as that is roughly the first year that Empire needs to consider new supply-side resources. The supply-side alternatives have been ranked using a spreadsheet model that computes levelized busbar costs. The levelized busbar costs considers capital, fuel and operating and maintenance costs for each technology and calculates costs for a range of capacity factors for each technology. These costs do not reflect how a specific technology would operate within the Empire generating system but instead is a stand-alone per unit cost calculated on a cents per kWh basis.

### 7.1 Base Environmental Costs

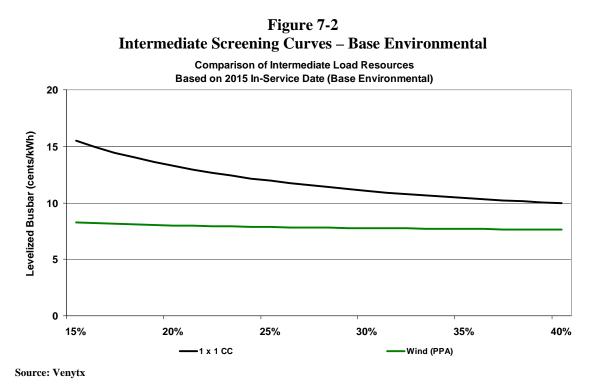
The first series of screening curves assumed base environmental costs. Screening curves are presented for baseload resources, intermediate resources, intermittent resources, and peaking resources. Rankings can be deduced by examining the curves at a specific capacity factor.

**Base Load Resources:** Figure 7-1 shows the screening curve for baseload resources over the range of 50% to 100% capacity factor. Technologies considered included coal, landfill gas, nuclear, IGCC and biomass.



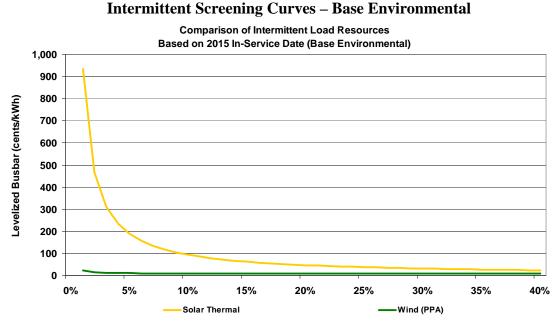
Source: Venytx

**Intermediate Load Resources:** The cost curve for the intermediate load resources shown on Figure 7-2 considers a capacity factor range of 15% to 40%. The technologies considered were a 1 x 1 combined cycle and wind.



**Intermittent Load Resources:** The screening curves for the intermittent load resources shown on Figure 7-3 include solar thermal and wind.

Figure 7-3

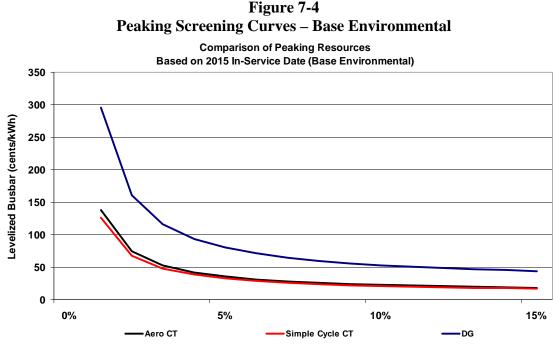


63

Source: Venytx

Empire District Electric 2010 IRP

**Peaking Load Resources:** The screening curves for the peaking load resources shown in Figure 7-4 include combustion turbines and distributed generation.



Source: Venytx

## 7.2 Probable Environmental Costs

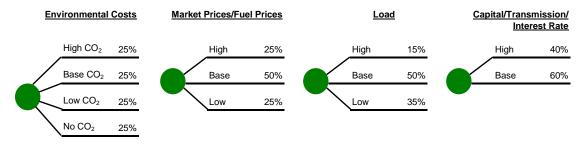
The second series of screening curves assumed probable environmental costs. Screening curves are presented for baseload resources, intermediate resources, intermittent resources, and peaking resources. Rankings can be determined through an examination of the relative values of the cost curves.

Ventyx used the non-zero probabilities for each scenario shown in Figure 7-5 to "weight rank" the supply-side alternatives when considering probable environmental costs. The cost of fuel was correlated to the emission costs for each of the scenarios.

64

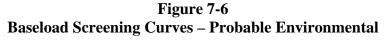
NP

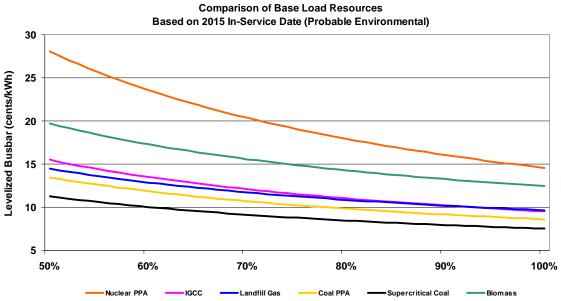
Figure 7-5
<b>Critical Uncertain Factors</b>



Source: Venytx

**Base Load Resources:** Figure 7-6 shows the cost curves for baseload resources over the range of 50%-100% capacity factor using the probable environmental costs. Technologies considered included coal, landfill gas, nuclear, IGCC and biomass.



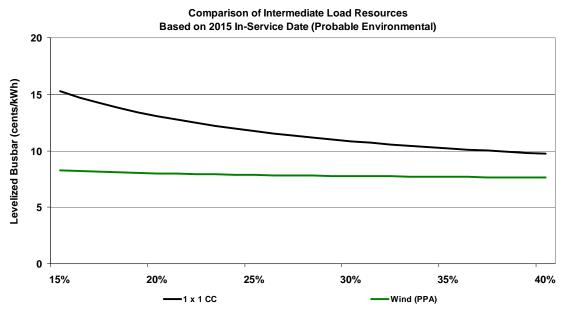


Source: Venytx

**Intermediate Load Resources:** The cost curve for the intermediate load resources shown on Figure 7-7 considers a capacity factor range of 15% to 40%. The technologies considered were combined cycle and wind.

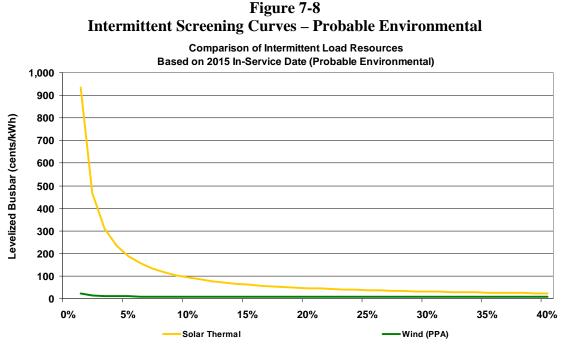
65

Figure 7-7 Intermediate Screening Curves – Probable Environmental



Source: Venytx

**Intermittent Load Resources:** The screening curves for the intermittent load resources shown on Figure 7-8 include solar thermal and wind.



Source: Venytx

**Peaking Load Resources:** The screening curves for the peaking load resources shown in Figure 7-9 include combustion turbines and distributed generation.

Empire District Electric 2010 IRP

NP

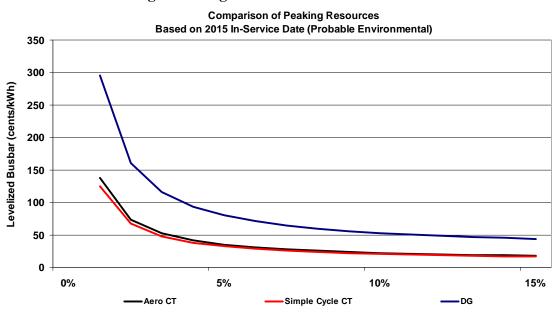


Figure 7-9 Peaking Screening Curves – Probable Environmental

Source: Venytx

# Appendix A– SPP Transmission Expansion Plan Projects

				SPP Boad of Directors Approved Appendix A projects January 26, 2010									
NTC_ID	an	GId	Project Type	Project Description/Comments	Cost Estimate	Facility Owner	In-Service Date	2009 STEP Date	2000 STEP BOD Action	Latest Letter of notification to construct is sue date	From Bus Name	To Bus Name	Circuit
00000	10001		and and an initiality	Basandustas C. d. J. mila Bastan (J.a. 276); Al East Gastadan (C.i. M. with (200 analysis))	\$5.017.000	Year 201	0	м		00112102	Evening die 070th Obert 404 Mil	East Centerton 161 kV	
20000 20016	10294 10440	343	regional reliability regional reliability	Reconductor 5.14 mile Bentonville 279th St East Centerton 161 kV with 1590 conductor. Replace 69 kV switches at Winnsboro and reset CT ratios and relay settings.	\$90,000	AEP AEP	05/01/10 05/01/10	M		01/16/09	Bentonville 279th Street 161 kV Winnsboro 69 kV	Magnolia Tap 69 KV	1
20016	10443 11185	346 893	regional reliability zonal - sponsored	Replace Quitman 69 kV bus, switches and jumpers. Change CT and relay settings. Restore existing 9.2 mile radial de-energized 138 kV line to service. Build 138-4.16 kV station at Enogex Wilberton.	\$185,000 \$1,455,000	AEP AEP	05/01/10	М		01/16/09	Forest Hills 69 kV Lone Oak 138 kV	Quitman 69 kV EnoGex Wilberton 138 kV	1
	11185	894	zonal - sponsored	Build new 0.6 mile double circuit tap from the existing Perdue - Lake Hawkins 138 kV line to a new 138 kV Exxon - Mobil Hawkins	\$3,550,000	AEP	12/01/10				Exron-Mobil Hawkins 138 kV	Perdue 138 kV	1
			zunal - aponsoreu	switching station. Build new 0.6 mile double circuit tap from the existing Perdue - Lake Hawkins 138 kV line to a new 138 kV Exxon - Mobil Hawkins									<u> </u>
	11187	894	zonal - sponsored	switching station.	\$3,550,000	AEP	12/01/10				Exion-Mobil Hawkins 138 kV	Lake Hawkins 138 kV	1
20016	10652	507	transmission service	Rebuild 3.24 miles of 1272 AAC with 2156 ACSR. Replace 3 138 kV switches, breaker jumpers, and reset CTs at Arsenal Hil. Replace 2 138 kV switches and jumpers at Fort Humbug.	\$5,428,300	AEP	05/01/10	м		01/16/09	Arsenal Hill 138 kV	Fort Humbug 138 kV	1
20016	50155	30147	transmission service	Replace auto and 69 kV breaker and switches.	\$3,005,700	AEP	05/01/10	м		01/16/09	Arsenal Hill 138 kV	Arsenal Hill 69 kV	2
20016	50154 50161	30146 30153	transmission service	Replace auto and 69 kV breaker and switches. Replace four (4) switches and upgrading bus work.	\$3,005,700 \$200,000	AEP	05/01/10	M		01/16/09	Arsenal Hill 138 kV Longwood 345 kV	Arsenal Hill 69 kV	1
20010	10862	657	transmission service regional reliability	Replace (3) 600 A switches with 1200 A switches.	\$200,000	AEP	06/01/10	06/01/10	NTC	01/10/09	Prvor Junction 115 kV	Langwood 138 KV Pryor Junction 69 KV	1
			transmission service					06/01/10 M	NIG				
19959 20000	10375 10380	289 294	regional reliability	Replace wave trap at Clinton City Substation. Replace Winesia 2 Switches & Breaker Biulio new 34 mile Turk - SE Texankana 138 kV line and add SE Texankana 138 kV terminal.	\$135,400 \$339.000	AEP	05/01/10 05/01/10	M		10/17/06 02/13/08	Clinton City 69 kV North Mineola 69 kV	Foss Tap 69 kV Mineola 69 kV	1
	10295	294 231 232	Generation Interconnect Generation Interconnect		\$25,590,000 \$18,427,000	AEP	12/31/10	M			Turk 138 kV Turk 138 kV	SE Texarkana 138 kV Sugar HII 138 kV	1
	10297			Build new 24 mile Turk - Supar Hill 138 kV line and add Supar Hill 138 kV terminal. AEPW to reconductor 1.09 miles of 795 ACSR with 1590 ACSR. (Also, Westar to rebuild 3.93 miles of 795 ACSR with 1590									
19953	10381	295	transmission service	ACSR.) These ratings are just for the AEP facilities.	\$1,008,000	AEP	05/01/10	м		06/26/07	Coffeyville T 138 kV	Dearing 138 kV	1
20000 20016	10383 10382	297 296	regional reliability transmission service	Reconductor Quitman - Westwood 69 kV 3.91 miles of 2/0 with 795 ACSR Rebuild/reconductor 5.17 mile Dvess - Eim Sprinos 151 kV with 2155 ACSR.	\$3,827,000 \$6,252,000	AEP AEP	05/01/10 05/01/10	M		02/13/08 01/16/09	Quitman 69 kV	Westwood 69 kV	1
20016 20027	10382 10445 10784	348 613	regional reliability	Replace 161 kV breaker, switches and CTs at Dvess.	\$224,000 \$100,000	AEP AEP AEP	05/01/10 12/01/10	M		01/16/09 01/27/09	Dvess 161 kV Dyess 161 kV	Eim Sorinos 161 kV Tontitown 161 kV	1
20027	10784	613 292	regional reliability regional reliability	Replace switch at Diana for higher winter rating of 287/316 MVA. Summer rating unchanged.	\$100,000 \$4,047,000	AEP	12/01/10 05/01/10	M		01/27/09	Diana 138 kV Greggton 69 kV	Lone Star South 138 kV Lake Lamond 69 kV	1
20027	10575	480	regional reliability	Reconductor 2.56 mile Greooton - Lake Lamond 59 kV with 1272 ACSR. Build new 4 mile AEP Snyder - WFEC Snyder 138 kV. WFEC to connect AEP Snyder to WFEC Snyder. AEP to provide 138 kV	\$800,000	AEP	12/31/10	M		01/27/09	AEP Snyder 138 kV	WFEC Snyder 138 kV	1
20027		767		terninal at AEP Snyder. Convert 17 mile Canadian River - McAlester City line from 69 kV to 138 kV.	\$17,000,000	1	12/31/10		170	01/2//09	Canadian River 138 kV	McAlester City 138 kV	<u> </u>
	11011 11012	767	regional reliability regional reliability	Tap Pitisburg - Muskogee 345 KV about 33 miles north of the Pitisburg station and step down to 138 KV with a 450 MVA auto.	\$8,500,000	AEP		06/01/10 06/01/10	NTC NTC		Canadian River 345 kV	Canadian River 138 kV	1
	11183	767	regional reliability	Rebuild McAlester City Tap, double circuiting existing line, eliminate the 'T' at McAlester City North Tap.	\$2,900,000	AEP AEP		06/01/10 06/01/10	NTC NTC		McAlester City 138 KV McAlester City 138 kV	Dustin 138 kV	1
	50286	30248	regional reliability regional reliability - non OATT	Rebuild McAlester City Tap, double circuiting existing line, eliminate the 'T' at McAlester City North Tap. Instal 2 Blocks of 14.4 Mvar	\$2,900,000	CRE		06/01/10	NIG		CR-S. Midland 138 kV	McAlester City North Tap 138 kV	1
	50287	30249	regional reliability - non OATT	Install 2 Blocks of 7.2 Mvar	\$583,200	CRE		06/01/10 M		02/13/08	CR-Salem	Name of CO. IN/	
20011	10271 10436	212 339	regional reliability zonal - sponsored	Reconductor 3 mile 69 kV line from 336.4 komil ACSR to 477 komil ACSS/TW Steo-Up Transformer for new SWPS #2 (DNR)	\$1,485,000 \$3,200,000	CUS	05/01/10 10/01/10	M		02/13/06	Norton 69 kV Southwest 161 kV	Neergard 69 kV Southwest 2 20 kV	1
20010	10275 50084	216 30078	regional reliability - non OATT Zonal Reliability	Rayburn Project Build new 10 mile Ben Wheeler - Barton Chapel 138 kV.	\$2,600,000	DETEC EDE	12/31/10 12/01/10	M		00/13/09	Ben Wheeler (Wood County EC) 138 kV SUB 438 - Riverside 161 kV	Barton's Chapel (Rayburn County) 138 kV	1
	10495 10547	382	regional reliability	Raboum Project – Buils new 10 mile Ben Wheeler - Barton Chapel 138 KV. Install (3) 22 Mar capacitor banks for a total of 56 Marr at Riverside SUb #438. Change CT setting on Breaker #6973 at Bader #271 to 8005 ratio.		EDE	05/01/10	M		09/18/09	SUB 404 - Hockerville 69 KV	SUB 271 - Baxler Springs West 69 kV SUB 152 - Monett H.T. 69 kV	1
20049 20036 19969	10547 10435	421	regional reliability transmission service	Change CT ratio on breaker #9358 at Aurora Substation 124. Rebuild 17 mie Neosho Souch Jd. – Neosho SPA 161 kV from 336 ACSR to 795 ACSR and replace terminal eouponent Replace 603 amp disconnect seltches with a minimum 1.203 amp units and replace leads on Breaker #6965 at Sub #64 and #6932 at	\$50,000 \$5,000 \$1,215,000	EDE	05/01/10	M		01/27/09	SUB 124 - Aurora H. T. 69 kV SUB 184 -Neosho South Junction 161 kV	SUB 152 - Monett H.T. 69 kV Neosho (SWPA) 161 kV	1
20049	10400	496	regional reliability	Replace 600 amp disconnect switches with a minimum 1,200 amp units and replace leads on Breaker #6965 at Sub #64 and #6932 at	\$55,000	EDE	05/01/10	06/01/15		09/18/09	SUB 145 - Joplin West 7TH 69 kV	SUB 64 - Jopin 10TH ST. 69 KV	1
20049	50225	30221	regional reliability	Sub #145. Add 12 Mvar cap bank at Ralph Green	\$485,000	GMO	05/01/10	00/01/13			Ralph Green 69 kV	305 04 - 30pin 10111 31. 09 kV	· ·
20034	10768	601	regional reliability	Replace wavetraps at Longview and Grandview East on the Grandview - Longview 161kV line.	\$50,000	GMO	06/01/10	м		01/27/09	Grandview East 161 kV	Longview 161 kV	1
20034	10816	628	regional reliability	Replace wavetrap at Platte City. Build a new Edmond 161/69/34.5 kV substation between the Cook and Lake Road 161 kV substations that will pick up the loads	\$50,000	GMO	12/01/10	М		01/27/09	Platte City 161 kV	Smithville 161 kV	1
20034	10832	635	regional reliability	supplied by the Lake Road 161/34.5 kV sources.	\$5,405,930	GMO	07/01/10	м		01/27/09	Cook 161 kV	Lake Road 161 kV	1
20053	50225	30222	regional reliability	Reset the overcurrent relay at South Harper 69 kV substation to open South Harper - Freeman 69 kV line upon reaching thermal limit	\$20,000	GMO	05/01/10			09/18/09			
20028	50078	30072	regional reliability	of Freeman – Anaconda – Harrisonville West 69 kV line Install (3) 7.2 Mvar capacitors for a total of 21.6 Mvar at Afton 69 kV bus.	\$800,000	GRDA	05/01/10	м		01/27/09	Afton 69 kV		<u> </u>
20001	10389	302	zonal - sponsored regional reliability	Tap the GRDA 1-Fint Creek 345 kV line and build a 345/161 transformer. Then build a 161 kV line down to Siloam Springs. Add second 161/69 kV 75 MVA autotransformer at Salisaw	\$3,210,200 \$3,000,000	GRDA GRDA	05/01/10 05/01/10	M			Siloam Springs Tap 161 kV Sallsaw 69 kV	Sloam City 161 kV Sallsaw 161 kV	1
20001	50083	30077	Zonal Reliability	Add second 161/69 KV 75 MVA autoransformer at Sallisaw New Craig 50 Mvar capacitor bank.	\$1,057,630	GRDA KCPL	05/01/10	M		02/13/08	Cralq 161 kV	Salibaw (61 KV	2
	10363 10256	279 200	zonal - sponsored zonal - sponsored	Replace Lenexa Circuit Switcher R1-4 with 2000 Amp Breaker	\$192,000 \$4,352,600	KCPL KCPL	05/01/10 09/30/10	M			Craig 161 kV Terrace 161 kV	Lenexa 161 KV Boulevard 161 KV	1
	10257	200 201 714	zonal - sponsored	New Boulevard sub and new 161kV line New 161kV line	\$4,750,000	KCPI	03/30/10	M			Crosslown 161 kV	Boulevard 161 kV	1
	10951	714 866	regional reliability zonal - sponsored	New 151W line Replace 200 A CT and 400 A wavetrap at Mayvlew to increase line rating. Rebuild Sheldon to 20th & PIO. Upgrade based on condition of facility.	\$5,000	KCPL LES	05/31/10	06/01/10 M	NTC		Amoco Pipeline 69 kV Sheldon 115 kV	Mayvlew Tap 69 kV 20th & PIO 115 kV	1
	11144	867	zonal - sponsored	Rebuild 3rd & Vandn to 20th & PIO. Upgrade based on condition of facility.	\$790,625	LES	05/31/10	M			3rd & Vandn 115 kV	20th & PIO 115 KV	
20052	50223	30219	transmission service	Rebuild 3rd & Vandn to 20th & PIO. Upgrade based on condition of facility. Rebuild approximately 14.5 miles of 34.5 kV line between Rice County and Elihwood to achieve a minimum 600 amp emergency rating	\$1,812,500	MIDW	05/01/10			09/18/09			
20054	50068	30062	regional reliability regional reliability	Add 138 kV 20 Mvar cap bank at Harper	\$1,400,000	MKEC	05/01/10	м		09/18/09	Harper 138 kV	1	+
20007	50067 50202	30061 30195		Install (2) 12 Mvar capacitor banks al Pratt 115kV. Add one 7.2 Mvar cap at Westminster	\$2,300,000 \$375,000	MKEC	03/01/10 05/01/10	M		02/13/08	Pratt 115 kV Westminster 34.5 kV		
	50202	30195	zonal - sponsored transmission service	Add one 7.2 Mvar cap at westminster Replace Canaday transformer.	\$375,000	NPPD	05/01/10	M			Canaday 115 KV	Canaday 230 kV	
	10772	603	regional reliability	Build 2.4 miles of new 115 kV line from Kansas/Nebraska state line to Steele City.	\$3,000,000	NPPD	10/01/10	06/01/10	NTC		Knob Hill 115 kV	Steele City 115 kV	1
	10775	605	regional reliability	Public and CT with Online to a Lattice Only A Linkshop 347 M (101)	\$5,000,000	NPPD	05/01/10	м	NTC		N. Platte 230 kV	N. Plate 115 KV	2
	11160	606	regional reliability regional reliability	Build new 67 mile Columbus East - NW 68th & Holdrege 345 kV line. Build new 12 mile Columbus East - Shell Creek 345 kV line.		NPPD NPPD	04/01/10 10/13/09	M	NTC NTC		Columbus East 345 kV Shell Creek 345 kV	NW 68 and Holdrege 345 kV Columbus East 345 kV	1
	10970	606	regional reliability	Upgrade Columbus East - Columbus line to 238 MVA.		NPPD	04/01/10	M	NTC		Columbus East 115 kV	Columbus 115 kV	1
	10971	606	regional reliability	Upgrade Pawnee Lake - Seward line to 120 MVA. Portion of this line will be double circuited with the Columbus East - NW 68th & Holdrege 345 kV line project.		NPPD	64/01/10	м	NTC		Pawnee Lk 115 kV	Seward 115 kV	1
	10972	606	rational reliability	Upgrade Pawnee Lake - NW 66th & Holdrege line to 137 MVA. Portion of this line will be double circuited with the Columbus East	\$150,000,000	NPPD	04/01/10	м	NTC		Dramon Lk 115 kW	NM 59th 8 Holdroop 115 M	1
	10972	000	regional reliability	NW 66th & Holdrege 345 kV line project.		NPPU	04/01/10	м	NIG		Pawnee Lk 115 kV	NW 68th & Holdrege 115 kV	<u> </u>
	10973	606	regional reliability	Upgrade Rising City - Seward line to 120 MVA. Portion of this line will be double circuited with the Columbus East - NW 68th & Holdrege 345 KV line project.		NPPD	04/01/10	м	NTC		Rising City 115 kV	Seward 115 kV	1
	11162	606	regional reliability	Add Columbus East 345/115/13.8 kV transformer.		NPPD	10/13/09	м	NTC		Columbus East 115 kV	Columbus East 345 kV	1
	10957	720	transmission service	Upgrade line to 240 MVA for WEC2.	\$6,750,000	NPPD NPPD	05/01/10	M			Geneva 115 kV	Sutton 115 kV	1
	10958	721	transmission service	Upgrade line to 240 MVA for WEC2.	\$200,000	NPPD	05/01/10	M	I		Hastings 115 kV	Hastings City 115 kV	+

. 1		-											
	10960 50252	723 30240	transmission service	Upgrade line to 240 MVA for WEC2. Install 9 Mvar capacitor bank at Cushing OII 69kV bus.	\$8,437,500	NPPD OGE	05/01/10	M 06/01/10	NTC		Sutton 115 kV	Whelan Energy Center 115 kV	1
$\vdash$	50252	30240	regional reliability regional reliability	Install 9 Mvar capacitor bank at Clering Oil 66kV bus.	\$360,000	OGE		06/01/10	NTC		Cushing OI2 69kV Tiger Creek2 69kV		_
L	10787	614	Sponsored	Build 120 mile 345 KV, 3000 amp capacity line from new OG&E Woodward District EHV substation to Northwest substation	4240,000	OGE	03/30/10	M	NIO		Northwest 345 kV	Woodward Distric EHV 345 kV	4
				At Northwest substation, Install a 3000 amp 345 kV breaker and new The terminal. Relocate Spring Creek Line to new bay. Terminate	1 1							Woodward Diddlo Erry 343 kv	
	10915	614	Sponsored	line from Tatonga. Install line relays and coordinate all relays at Northwest Substation.	/	OGE	03/30/10	M			Northwest 345 kV		1
	10788	614	Sponsored	Install 345/138 kV transformer.	\$218,000,000	OGE	03/30/10	M			Woodward Distric EHV 345 kV	Woodward EHV 138 kV Woodward 138 kV	
	10788	614	Sponscred	Build .5 miles of 138 KV and install terminal equipment .		OGE	03/30/10	M			Woodward EHV 138 kV	Woodward 138 kV	1
	10790	614	Sponsored	Build .5 miles of 138 kV and install terminal equipment .	] /	OGE	03/30/10	M			Woodward EHV 138 kV	Woodward 138 kV	2
	10791 11182	614	Sponsored	Tap lodine - Woodward 138 kV.		OGE	03/30/10	M			Woodward EHV 138 kV	lodine 138 kV	1
		892	regional reliability	Install Canadian River 345 kV terminal equipment at new Canadian River substation tapping the Pittsburg-Muskogee line.	\$5,500,000	OGE		06/01/10	NTC		Canadian River 345 kV		
	10391	310	zonal - sponsored	Conversion from 69kV to 161kV.	\$1.416.000	OGE	05/01/10	M			Fitzhuah 161 kV	Helberg 151 kV	1
	10393 10395	310 310	zonal - sponsored	Conversion from 69kV to 161kV.	\$660,000	OGE	12/31/10	M			Altus 161 kV	Fitzhugh 161 kV	1
	10395	310	zonal - sponsored	Conversion from 69kV to 161kV.	\$2,112,000	OGE	05/01/10	M			Little Spadra 161 kV	igo 161 kV	1
	10397	309	zonal - sponsored zonal - sponsored	Relav upprade. Conversion from 69kV to 161kV.	\$50,000	OGE	05/01/10				Park Lane 69 KV loo 161 KV	Ahloso Tab 59 kV Razorback 161 kV	- 1
+	10398 10399	310 310	zonal - sponsored	Conversion from 69kV to 161kV.	\$2,973,000 \$500,000	OGE	10/01/10 06/01/10	M			Razorback 161 kV	Short Mountain 161 kV	
	10/00	310	zonal - sponsored	Conversion from 65kV to 161kV.	\$3,000,000	OGE	10/01/10	M			Short Mountain 161 kV	Branch 161 kV	1
20029	10463	354	recional reliability	Upgrade wavetrap and switches to 800 A at 3rd St. substallon.	\$3,231,000 \$100,000	OGE	10/01/10 05/01/10	06/01/10	NTC-Modify Scope	01/27/09	Muldrow 69 kV	3rd St 69 kV	1
20002	10400 10463 10513	31D 354 395	regional reliability	Replace a wave trap, breaker, and increase CT ratio.	\$347,073	OGE	05/01/10	06/01/10 M		01/27/09 02/13/08	Russett 138 kV	Russett 138 kV	1
	11001	758	and an arrest	Rebuild Sub 902 - Sub 983 69 KV. The purpose of this project is to address maintenance-related issues, not to address violations of	\$2,500,000	OPPD	02/26/10	м			SUB 902 69 KV	SUB 983 69 KV	1
	11001	/00	zonal - sponsored	reliability orteria.	\$2,500,000	OPPD	02/26/10	M			50B 902 69 KV	20B 303 69 KV	
					\$1,000,000	SEPC		06/01/10			Johnson Compr 115 kV		
1 1	50246	30234	regional reliability	Install 12 Mvar capacitor bank at Johnson Comer 115 kV substation.	\$1,000,000	SEPC		06/01/10	NTC		Johnson Camer 115 kV		
	10336 50217	255 30213	regional reliability	Convert Johnson Corner - Ploneer line from 69 kV to 115 kV.	\$10,650,000	SEPC SPS	05/01/10	06/01/10	NTC NTC		Johnson 115 KV	Ploneer 115 kV	1
	50217	30213	regional reliability	Convert Johnson Corner - Ploneer line from 69 kV to 115 kV. Install 50 Mvar capacitor bank at East Plant 115 kV bus configured as two blocks of 25 Mvar.	\$2,025,000				NTC		East Plant 115 KV		
	50288	30250	zonal - sponsored	Install 1 stage of 7.2 Mvar	\$288,000	SPS	05/01/10	M			Perryton Interchange 69 KV		
	50289	30251	zonal - sponsored	Install a 7.2 Mvar cap at Castro County 69 kV	\$288,000	SPS	05/01/10	M			Castro County Interchange 69 kV Harrington Station Mid Bus 230 kV		
	50257	30244	regional reliability	Replace 800A wave trap with 1200A.	\$225,000	SPS		06/01/10 M	NTC		Harrington Station Mid Bus 230 kV		
	10407 10317	315	regional reliability	Upgrade terminal eoupment, Rate A & B 185 MVA Install 11569 KV Graves transformer. Install new 220115 KV transformeral Wheeler Co (near State Line of Oklahoma and Texas)	\$200,000	SPS SPS	05/01/10	M			Roosevelt County Interchange 115 kV	Curry County Interchange 115 KV	
20004		248	regional reliability	Install 115/09 KV Graves transformer.			05/01/10	M		02/13/08	Grave County Tap 115 kV	Graves Sub 69 kV	_
20004	10318	248 248	regional reliability		\$10,585,000	SPS	05/01/10	M		02/13/08	Wheeler Interchange 230 kV	Wheeler Interchange 115 kV Graves Sub 115 kV	_
20004	10319		regional reliability	Build new 17 mile Wheeler Co to Graves 115 kV and modify 69 kV bus.	<u>                                     </u>	SPS	05/01/10	M		02/13/08	Wheeler Interchange 115 kV	Wheeler Interchange 030 kt/	1
20004	10800	248	regional reliability	Wheeler County tap	\$2,000,000	SPS SPS	05/01/10	M			Elk City 230KV Grappy (ne interchappe 230 kV)	Wheeler Interchange 230 kV Wheeler Interchange 230 kV	
20004	10801	248 156	regional reliability regional reliability	Wheeler County tap Build annu 50 mile Marco County, Hitsbirger, 330 M/ cated at 544 M/A	\$16,094,371	5P5	05/01/10 12/31/10	M		02/13/08	Grapevine Interchange 230 kV Moore Co 230 kV	Wheeler Interchange 230 kV Hitchland 230 kV	1
20031 20004	10326 10327	156	regional reliability	Build new 50 mile Moore County - Hitchland 230 kV rated at 541 MVA. Add 3-Winding 345/230 kV transformer at Hitchland - 560 MVA.	\$12,577,500	SPS SPS	05/01/10	M			Hitchland 345 kV	Hitchland 230 kV	1
20004	10328	156	regional reliability	Build new 28 mile Hitchland - Sherman Tao 115 KV rated at 161 MVA.	\$15,848,000	SPS	05/01/10	M		02/13/08	Sheman Tap 115 kV	Hitchland 115 kV	1
20004	10329	156	regional reliability	Add 115 kV line from Sheman to Dallam - 161 MVA.	\$10 771 825	SPS	05/01/10	M	NTC-Modify Scope	02/13/08	Sherman Sub 115 kV	Dallam County Interchange 115 kV	1
20004 20004	10329	155	regional reliability	Build new 9 mile Hitchland - Texas Co. 115 KV rated at 161 MVA.	\$10,771,825 \$5,132,829	SPS	05/01/10	M		02/13/08 02/13/08	Texas County Interchange 115 kV	Hitchland 115 kV	2
20004 20004		156	regional reliability	Add 2-winding 230/115 kV transformer at Hitchland - 252 MVA.	\$31,915,701	SPS SPS	05/01/10 05/01/10	M		02/13/08	Hitchland 115 KV Hitchland 115 KV	Hitchland 230 kV	1
20004	10201 10802	156	regional reliability	Add 2-winding 230/115 kV transformer at Hitchland - 252 MVA. Tap the Texas County to Hansford line.		SPS	05/01/10	M				Hansford 3 115 kV	1
20004	10805	156	regional reliability	Tap the Texas County to Hansford line.		SPS	05/01/10			02/13/08	Texas County Interchange 115 kV	Hitchland 115 KV	1
20031	10704	554	regional reliability	Build new 35 mile Dallam - Channing 115 kV using 795 ACSR.		SPS	12/31/10			01/27/09	Dallam County Interchange 115 kV	Channing 115 kV	1
20031	10705	554	regional reliability	Convert 15 mile Channing - Tascosa line from 69 kV to 115 kV with 795 ACSR.	\$27,452,677	SPS	12/31/10			01/27/09	Channing 115 kV	Tascosa 115 KV	1
20031	10705	554	regional reliability	Convert 30 mile Tascosa - Northwest Interchange line from 69 kV to 115 kV with 795 ACSR.	1	SPS	12/31/10	M		01/27/09	Tascosa 115 kV	Northwest interchange 115 kV	1
	11018	773	regional reliability	Add 2nd 230/115 kV transformer at Roosevelt.	\$5,670,000	SPS		06/01/10	NTC		Roosevelt County interchange 115 kV	Roosevelt County Interchange 230 kV	2
	11026	776	regional reliability	Build new 1 mile Deaf Smith to Panda 115 kV line.	\$600,000	SPS	05/30/10	06/01/10	NTC		Dear Smith County Interchange 115 kV	Panda Energy Substation, Hereford 115 kV	/ 1
	11027	777	regional reliability	Reconductor 2.24 mile East Plant - Manhattan 115 kV line.	\$1,100,000	SPS SPS		06/01/10	NTC		East Plant Interchange 115 kV	Manhattan Sub 115 kV	1
	11032	782	regional reliability	Rebuild 4 mile Osage Switching Station - South Georgia Interchange 115 kV with 795 ACSR.	\$1,687,500			06/01/10	NTC		South Georgia Interchange 115 kV	Osage Switching Station 115 KV	1
	11084	821	regional reliability	Reconductor 2 mile Osage Switching Station - Randall County Interchange 115 kV line with 795 ACSR.	\$1,125,000	SPS		06/01/10	NTC		Osage Switching Station 115 kV	Randall County Interchange 115 kV	1
	11097	830	regional reliability	Reconductor 1.6 mile Manhattan - Randall County Interchange 115 kV line with 795 ACSR.	\$900,000	SPS SPS		06/01/10	NTC		Manhatten Tap 115 kV	Randall County Interchange 115 kV	1
	11121	851	regional reliability	Replace existing wavefrap with 1200 A unit.	\$225,000		05/16/10		NTC		Harrington Mid. 230 kV	Randall Co 230 kV	1
	10439 10125 50085	342	regional reliability - non OATT	Replace Eufaula161/138 KV transformer with 200 MVA unit.	\$2,200,000	SWPA	01/01/10	06/01/10			Bull Shoals 161 kV	Bulishcals 161 KV Eufaula 138 KV	1
20003	10125	101 30079	regional reliability - non OATT	Replace Eufaula161/138 kV transformer with 200 MVA unit. Install 12 Mvar capacitor at Carter Jct which makes at total of 24 Mvar.	\$3,000,000	SWPA	10/01/10 05/01/10	M		02/13/08	Eufaula 161 kV	Eufaula 138 kV	1
20003	50065	30079	regional reliability regional reliability		\$324,000	WFEC	05/01/10				Carter 69 kV		_
20030	10176	138		Install 12 Mvar capacitor at Eagle Chief Southwest 69 KV bus. Upgrade WFEC Woodward sub to 1200 A and reconductor from 336.4 ACSR to 795 ACSR; new rating 91/110 MVA.	\$300,000	WFEC WFEC	05/01/10	M		01/27/09 02/13/08	Eagle Chief 69 kV OGE Woodward 69 kV	WFEC Woodward 69kV	
20000	10205		regional reliability regional reliability	Durage wire working to 1200 A and recorded in this 35.4 ACSR to 755 ACSR, new rating \$1710 MVA.	\$1,000,000						OGE Woodward og kv		
20030 20003	10305 10307	239 241	regional reliability	Denie new 4 nie zwar oniywa r VYECO Oniyuti 130 MV.		WFEC	12/31/40	M			AED Sourier 138 kV	WEEC Studier 138 kV	1
20003	10308		respondent considering		\$3,373,000	WFEC WFEC	12/31/10	M			AEP Snyder 138 kV Anadarko 138 kV	WFEC Snyder 138 kV Georgia 138 kV	1
20003	10309		regional reliability	Build new 4 mile AEP Smyder - WFEC Smyder 138 kV. Rebuild 2 mile Anataria- Georgia 138 kV line from 556 to 1113 ACSR. Emore - Paol Rebuild 30 to 35 ACSR - 108 miles.	\$3,373,000 \$1,124,000 \$3,240,000	WFEC WFEC	12/31/10 05/01/10	M		01/27/09 02/13/08	Anadarko 138 kV	WFEC Snyder 138 kV Georgia 138 kV	1
20003 20003		242 243	regional reliability regional reliability	Emore - Paol Rebuild 3/0 to 336 ACSR - 10.8 miles.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800	WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10	M		01/27/09 02/13/08 02/13/08	Anadarko 138 kV Elmore 69 kV	WFEC Snyder 138 kV Georgia 138 kV Paola 69 kV	1 1 1 1 1 1 1
20023	10310		regional reliability regional reliability	Emore - Paol Rebuil 3/0 to 335 ACSR - 10.8 miles. Convert 5 mile Oklahoma University (OU) Switch - Goldsby from 59 kV to 138 kV. Convert 6 mile Goldsby - Canadian Switch from 69 kV to 138 kV.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000	WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 138 kV Elmore 69 kV	WFEC Snyder 138 kV Georgia 138 kV	1 1 1 1 1
20003	10309 10310 10311	243 243	regional reliability regional reliability regional reliability	Emore - Paol Rebuil 3/0 to 335 ACSR - 10.8 miles. Convert 5 mile Oklahoma University (OU) Switch - Goldsby from 59 kV to 138 kV. Convert 6 mile Goldsby - Canadian Switch from 69 kV to 138 kV.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,000,000	WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 138 kV Elmore 59 kV OU Switchyard 138 kV Goldsby 138 kV OU Switchyard 138 kV	WFEC Snyder 138 kV Georgia 138 kV Paola 69 kV Goldsby 138 kV Canadian SW 138 kV OU Switchward 69 kV	1
20003	10311	243 243	regional reliability regional reliability regional reliability regional reliability	Emore - Paol Rebuil 3/0 to 335 ACSR - 10.8 miles. Convert 5 mile Oklahoma University (OU) Switch - Goldsby from 59 kV to 138 kV. Convert 6 mile Goldsby - Canadian Switch from 69 kV to 138 kV.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,000,000 \$5,674,000	WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 138 kV Elmore 59 kV OU Switchyard 138 kV Goldsby 138 kV OU Switchyard 138 kV	WFEC Snyder 138 kV Georgia 138 kV Pada 59 kV Goldsby 138 kV Canadian SW 138 kV OU Switchward 58 kV Hammet 138 kV	1
20003 20003	10311 10174 10175	243 243 136 137	regional reliability regional reliability regional reliability regional reliability regional reliability	Elmore - Paol Reduit 30 to 336 ACSR - 10.8 miles. Convert 5 mile Oxidamo LUNvestig VOU Saltch - Godistay from 69 KV to 138 KV. Convert 5 mile Godisby - Canadian Saltch from 69 KV to 138 KV. Instal 13868 KV Arasformar 4. Oxamona Lunkestku. Bulionew 10 mile Meeker - Hammet 138 KV and Instal terminal equipment. Reconductor 158 mile Valta - Hasteria Junction 69 KV from 10 ACSR to 338.4 ACSR for new raling of 53/65 MVA.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,000,000 \$5,674,000 \$5,378,750	WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 138 KV Elimore 58 KV OU Switchward 138 KV Goldsby 138 KV OU Switchward 138 KV Meeker 138 KV Wakita 59 KV	WFEC Smoler 138 kV         Georgia 138 kV           Padia 65 kV         Goldsby 138 kV           Candalia SW 138 kV         OU Switchward 69 kV           Ou Switchward 69 kV         Hammett 138 kV	1 1 1 1 1 1 1 1
20003 20003	10311 10174 10175	243 243	regional reliability regional reliability regional reliability regional reliability regional reliability	Elimore - Paol Ekstulia 3/b 3/b ACSR - 10.8 miles. Convert 5 mile Context 5 mile Context 5 miles (Context 5 miles). Convert 6 mile Context - Inter Context 5 miles. Convert 6 mile Context - Interactioner 4 of Context 5 miles. Interact 13/bits 0/bits 1/bits 1	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,674,000 \$5,674,000 \$5,378,750 \$2,065,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 138 kV Elmore 69 kV OU Switchward 138 kV Goldsby 138 kV OU Switchward 138 kV Meeker 138 kV Wakita 69 kV Franklin SW 138 kV	WFEC Smoter 138 kV Georgia 138 kV Pabla 59 kV Galasov 138 kV Canadian SW 138 kV Canadian SW 138 kV Cau Switchward 58 kV Hamett 138 kV Hazeton 59 kV ACME 138 kV	1
20003 20003	10311 10174 10175	243 243 136 137 311 311	regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Elmore - Paol Reduita 30 336 ACBR - 10.8 miles. Convert 5 mile Advanna University (UU) Saltch - Godistay from 59 KV to 138 KV. Convert 5 mile Advance Junkers (VU) Saltch - Godistay from 59 KV to 138 KV. Tistal 13856 KV stransforms at Outspanna University. Build new 10 mile Meeker - Hammet 138 KV and Instal terminal equipment. Reconducts T38 mile Vaata - Haseista Junction 69 KV to 138 KV. Convert 5 mile Nome - Franklin from 69 KV to 138 KV.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,674,000 \$5,574,000 \$5,378,750 \$2,065,000 \$1,601,000 \$1,572,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anadarko 133 kV Elmore 69 kV OU Switchward 138 kV OU Switchward 138 kV OU Switchward 138 kV Meeker 138 kV Waxita 65 kV Frankin SW 138 kV ACME 138 kV	WFEC Singer 138 kV           Georgia 136 kV           Papia 66 kV           Goldsby 138 kV           Canadian SIW 138 kV           Cut Sint/Encode 66 kV           Hammet 138 kV           ActME 138 kV           West Norman 138 kV	1 1 1 1 1 1 1 1
20003 20003 20003 20003 20003	10311 10174 10175 10401 10402 10403	243 243 136 137 311 311 311	regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Elimore - Paol Resulta 3/0 336 ACSR - 10.8 miles. Convert 5 mile Colorador al University (UU) solute - Goldsky from 59 KV to 138 KV. Convert 5 mile Colorador al University (UU) solute - Goldsky from 59 KV to 138 KV. Elited Free III of the Second Secon	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,674,000 \$5,674,000 \$5,674,000 \$5,675,000 \$1,661,000 \$1,661,000 \$1,677,000 \$5,265,600	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anacarko 138 KV Eimore 59 KV OU Switchward 138 KV Goldsby 138 KV OU Switchward 138 KV Wakita 59 KV Frankin SW 138 KV ACME 138 KV West Norman 138 KV	WFEC Singler 138 kV Georgia 136 kV Pagla 65 kV Gordsor 138 kV Carabian SW 138 kV Carabian SW 138 kV Carabian SW 138 kV Hazelino 65 kV Hazelino 65 kV AcME 138 kV West Norman 138 kV	1 1 1 1 1 1 1 1 1 1
20003 20003 20003 20003 20003	10311 10174 10175 10401 10402 10403	243 243 136 137 311 311 311 616	regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Elmore - Paol Refutil 30 236 ACBR - 10.2 miles. Convert 5 mile Oxistano LUIVestig V(U) Saltch - Goldstay from 59 KV to 138 KV. Convert 5 mile Goldstay - Canadian Saltch from 68 KV to 138 KV. Bull onev 10 mile Meeker - Hammet 138 KV and Install terminal equipment. Reconductor 138 mile Valta - Haseisto Junction 69 KV to 138 KV. Convert 5 mile Nome - Franklin from 69 KV to 138 KV. Convert 5 mile Vers Nomana - Knom from 69 KV to 138 KV. Convert 5 mile Vers Nomana - Knom from 69 KV to 138 KV. Convert 5 mile Vers Nomana - Knom from 69 KV to 138 KV.	\$3,373,000 \$1,124,000 \$3,240,000 \$2,753,800 \$2,250,000 \$5,000,000 \$5,674,000 \$5,378,750 \$2,065,000 \$1,661,000 \$1,577,000 \$5,765,600 \$5,375,700	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anacarko 138 KV Eimore 59 KV OU Switchward 138 KV Goldsby 138 KV OU Switchward 138 KV Wakita 59 KV Frankin SW 138 KV ACME 138 KV West Norman 138 KV	WFEC Singer 138 kV           Georgia 136 kV           Pagia 66 kV           Goldsby 138 kV           Canadian SW 138 kV           OLL Switchward 66 kV           Hammelt 138 kV           Hammelt 138 kV           Viest Norman 138 kV           OU SWItChward 87 kV           OU SWIT 138 kV	1 1 1 1 1 1 1 1
20003 20003	10311 10174 10175	243 243 136 137 311 311 311	regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Elimore - Paol Esculta 3/0 3/36 ACGR - 10.8 miles. Convert 5 mile Context 5 mile Context 5 miles (Context 5 miles). Convert 5 mile Context 5 mile Context 5 miles. Convert 5 mile Context 5 mile Value 1 Miles 1 Miles 1 Miles 1 Miles 1 Miles 1 Miles Build new 10 miles Meeter - Hammer 1 Miles	\$3,373,000 \$1,124,000 \$2,250,000 \$2,250,000 \$5,000,000 \$5,578,750 \$2,065,000 \$1,677,000 \$1,577,000 \$1,577,000 \$5,765,600 \$3,316,400	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08	Anackino 138 4V Elimere 59 kV OU Switchward 138 kV OU Switchward 138 kV OU Switchward 138 kV Weeker 138 kV Wakita 59 kV Franklin SW 138 kV West Norman 138 kV Dover 319 kV	WFEC Singler 138 kV Georgia 136 kV Pagla 65 kV Gordsor 138 kV Carabian SW 138 kV Carabian SW 138 kV Carabian SW 138 kV Hazelino 65 kV Hazelino 65 kV AcME 138 kV West Norman 138 kV	1 1 1 1 1 1 1 1 1 1 1
20003 20003 20003 20003 20003 20030 20030 20030	10311 10174 10175 10401 10402 10403 10794 10795 10796	243 243 136 137 311 311 311 616 616 616 616	regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Elimore - Paol Retuita 3/0 3/34 ACSR - 10.8 miles. Convert 5 mile Goldsov - Culo Saldt - Goldsov from 69 KV to 138 KV. Convert 5 mile Goldsov - Canadian Saldtin from 69 KV to 138 KV. Tastal 138/64 KV - ransforme at Oxeden Junction 69 KV to 138 KV. Build new 10 mile Meeker - Hammet 138 KV and Install Reminal equipment. Reconcision 15 mile Anore - Franklin from 69 KV 50 KV from 10 ACSR to 336.4 ACSR for new railing of 53/65 MVA. Convert 5 mile Anore - Franklin from 69 KV 50 KV KV. Convert 5 mile Anore - Franklin from 69 KV 50 KV KV. Convert 11 mile Dover Southwest - Dover from 69 KV 10 138 KV. Convert 11 mile Dover - Twin Laker from 69 KV 10 138 KV. Convert 12 mile Dover - Twin Laker Strom 69 KV 10 138 KV. Convert 12 mile Twin Lakes - Coation from 69 KV 10 138 KV.	\$3,373,000 \$1,124,000 \$2,753,800 \$2,250,000 \$5,674,000 \$6,674,000 \$5,378,750 \$2,665,000 \$1,601,000 \$1,677,000 \$5,315,700 \$3,364,000 \$3,363,500	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/127/09 01/127/09	Anactine 138 4V Eminre 59 4V OU Switchward 138 4V Gul Switchward 138 4V OU Switchward 138 4V Weeken 138 4V Wash Robert 138 4V Week Norman 138 4V Week Norman 138 4V Dover 138 4V Dover 138 4V Tun Laves 138 4V	WFEC Singler 138 kV           Georgia 138 kV           Paga 86 kV           Goldby 138 kV           Goldby 138 kV           OLL Switchwards 58 kV           Hammeft 138 kV           OLL Switchwards 58 kV           Hammeft 138 kV           OLL Switchwards 58 kV           Addet 138 kV           OLL Switchwards 78 kV           Table 138 kV           Could 118 kV           Could 118 kV           Could 118 kV           Thin Lawse 138 kV	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
20003 20003 20003 20003 20003 20030 20030 20030	10311 10174 10175 10401 10402 10403 10794 10795 10796	243 243 136 137 311 311 311 616 616	regional reliability regional reliability	Elimore - Paol Escuel 3 10 336 ACSR - 10.8 miles. Convert 5 mile Context 5 mile Context 5 miles (200 Saltet - Goodsky from 69 KV to 138 KV. Convert 6 mile Context - Name Context 5 MV and ISA I I I I I I I I I I I I I I I I I I	\$3,373,000 \$1,124,000 \$2,753,800 \$2,250,000 \$6,674,000 \$5,578,750 \$1,661,000 \$1,577,000 \$1,577,000 \$5,5375,700 \$3,164,000 \$3,337,500 \$1,500,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/127/09 01/127/09	Anactine 138 4V Eminre 59 4V OU Switchward 138 4V Gul Switchward 138 4V OU Switchward 138 4V Weeken 138 4V Wash Robert 138 4V Week Norman 138 4V Week Norman 138 4V Dover 138 4V Dover 138 4V Tun Laves 138 4V	WFEC Singler 138 kV           Georgia 136 kV           Paola 65 kV           Goddsy 136 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           AcME 138 kV           OU Switchward 68 kV           Vest Norman 138 kV           OU SW 138 kV           OU SW 138 kV           Ou SW 138 kV           Our 138 kV           Our 138 kV	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10799	243 243 136 137 311 311 311 616 616 616 616 616 617 135	regiona reliability regiona reliability	Elimore - Paol Escuel 3 10 336 ACSR - 10.8 miles. Convert 5 mile Context 5 mile Context 5 miles (200 Justich - Context 5 mile	\$3,373,000 \$1,124,000 \$2,273,800 \$2,250,000 \$5,000,000 \$6,674,000 \$5,378,750 \$2,265,000 \$1,601,000 \$1,677,000 \$5,765,600 \$5,765,600 \$5,765,600 \$3,164,000 \$3,937,500 \$1,248,3750	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M M M M		01/27/09 02/13/08 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09	Anadaria 138 4V Emmet 59 4V Emmet 59 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Warkla 58 4V Warkla 58 4V West Norman 138 4V Cuert 138 4V C	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maxmed: 138 kV           Hammed: 138 kV           Maxmed: 138 kV           Doer: 138 kV           Doer: 138 kV           Canadian SW 128 kV           Doer: 138 kV           Canadian SW 128 kV           Doer: 138 kV           Canadian SW 128 kV           Canadian SW 128 kV           Doer: 138 kV           Lake Creek 58 kV           Lake Creek 58 kV           Lake Creek 58 kV	
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10799	243 243 136 137 311 311 311 616 616 616 616 616 616 617 135	regiona relability regiona relability	Elimore - Paol Escuel 3 10 336 ACSR - 10.8 miles. Convert 5 mile Context 5 mile Context 5 miles (200 Justich - Context 5 mile	\$1,248,750 \$2,328,750	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M M M M M		01/27/09 02/13/08 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09	Anadaria 138 4V Emmet 59 4V Emmet 59 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Cul Switchweir 138 4V Warkla 58 4V Warkla 58 4V West Norman 138 4V Cuert 138 4V C	WFEC Singler 138 kV           Georgia 138 kV           Paola 64 kV           Gordso 138 kV           Canadan SW 138 kV           Canadan SW 138 kV           Hamedi 138 kV           Hamedi 138 kV           Out SW 138 kV           Out SW 138 kV           Down 138 kV           Lands Creek 58 kV           Lindsav DW 68 kV           Lindsav DW 58 kV	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10799	243 243 136 137 311 311 311 616 616 616 616 616 616 617 135	regiona relability regiona relability	Elimore - Paol Retuita 3/0 336 ACSR - 10.8 miles. Convert 5 mile Goldsov - Canadian Sattan from 68 VV to 138 VV. Convert 5 mile Goldsov - Canadian Sattan from 68 VV to 138 VV. Task 13864 VV. Tarsformer 4. Oxadow JunceSov VV. Build new 10 mile Meeker - Hammer 138 VV and Install Reminal equipment. Reconcilist 17 Sim VV. And Sattan from 69 VV to 138 VV. Convert 1 mile Meeker - Hammer 138 VV and Install Reminal equipment. Reconcilist 17 Sim VV. Convert 1 mile Meeker - Hammer 108 VV to 128 VV. Convert 1 mile Dover Southneesi - Dover from 68 VV to 138 VV. Convert 1 mile Dover - Your Laker from 68 VV to 138 VV. Convert 1 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile VPC Thiru Lakes - Caselion from 68 VV to 138 VV. Reconductor 5 miles of 10 ACSR to 556 ACSR from Linksav bu Linksav Southweet 69 VV. Reconductor 5 miles from 30 ACSR from 50 AVB Reconductor 50 VV. Reconductor 5 miles from 30 ACSR from 50 AVB	\$1,248,750 \$2,328,750 \$912,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12(31/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09	Anackrin 138 4V Emrore 59 4V CU Satichard 138 4V CU Satichard 138 4V CU Satichard 138 4V CU Satichard 138 4V Fanin DW 138 4V Fanin DW 138 4V ACME 138 4V Dear 518 43 4V Dear 518 43 4V Dear 518 43 4V Curr 138 4V Curr 148 4V	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maximum SR kV           Maximum SR kV           Maximum 138 kV           Dober 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Castorn 138 kV           Castorn 138 kV           Castorn 138 kV           Lake Creek 58 kV           Landser SW 68 kV           Rush Springs 59 kV           W Norman 69 kV	
20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030	10311 10174 10175 10401 10402 10794 10795 10795 10795 10797 10798 10797 10799 10779 10799 10173	243 243 136 137 311 311 616 616 616 616 616 616 616 617 135 135 140	regiona relability regiona relability	Elimore - Paol Retuita 3/0 336 ACSR - 10.8 miles. Convert 5 mile Goldsov - Canadian Sattan from 68 VV to 138 VV. Convert 5 mile Goldsov - Canadian Sattan from 68 VV to 138 VV. Task 13864 VV. Tarsformer 4. Oxadow JunceSov VV. Build new 10 mile Meeker - Hammer 138 VV and Install Reminal equipment. Reconcilist 17 Sim VV. And Sattan from 69 VV to 138 VV. Convert 1 mile Meeker - Hammer 138 VV and Install Reminal equipment. Reconcilist 17 Sim VV. Convert 1 mile Meeker - Hammer 108 VV to 128 VV. Convert 1 mile Dover Southneesi - Dover from 68 VV to 138 VV. Convert 1 mile Dover - Your Laker from 68 VV to 138 VV. Convert 1 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile Dover - Your Laker from 68 VV to 138 VV. Convert 12 mile VPC Thiru Lakes - Caselion from 68 VV to 138 VV. Reconductor 5 miles of 10 ACSR to 556 ACSR from Linksav bu Linksav Southweet 69 VV. Reconductor 5 miles from 30 ACSR from 50 AVB Reconductor 50 VV. Reconductor 5 miles from 30 ACSR from 50 AVB	\$1,248,750 \$2,328,750 \$912,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10 05/01/10	M M M M M M M M M M M M M M M M M M M		01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09	Anackrin 138 4V Emrore 59 4V CU Satichard 138 4V CU Satichard 138 4V CU Satichard 138 4V CU Satichard 138 4V Fanin DW 138 4V Fanin DW 138 4V ACME 138 4V Dear 518 43 4V Dear 518 43 4V Dear 518 43 4V Curr 138 4V Curr 148 4V	WFEC Singler 138 kV           Georgia 138 kV           Paola 64 kV           Gordso 138 kV           Canadan SW 138 kV           Canadan SW 138 kV           Hamedi 138 kV           Hamedi 138 kV           Out SW 138 kV           Out SW 138 kV           Down 138 kV           Lands Creek 58 kV           Lindsav DW 68 kV           Lindsav DW 58 kV	
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030	10311 10174 10402 10402 10402 10794 10795 10796 10796 10799 10799 10799 10779 10779 10779 10779 10779 10779	243 243 136 137 311 311 311 311 311 616 616 616 616 616	regiona relability regiona relability	Elimore - Paol Esculta 310 336 ACCR - 10.8 miles. Convert 5 mile Contrast - Inite Control (U.) settlet - Cooksby from 69 KV to 138 KV. Convert 5 mile Control - Network - Netw	\$1,248,750 \$2,328,750	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 05/01/10 06/01/	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scope	01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09 01/27/09	Anackino 138 4V Emore 59 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V Fannin DW 138 4V Fannin DW 138 4V AcKEl 138 4V Devef 138 4V Cover 518 138 4V Thin Lakes 138 4V Cover 518 438 4V Currel 138 4V Currel	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maximum Kerk           Maximum Kerk           Maximum Kerk           Maximum Kerk           Canadian SW 138 kV           Dober 138 kV           Dober 138 kV           Canadian SW 58 kV           Lanac Creek 58 kV           Lanac Syntaps 59 kV           W Norman 69 kV	
20003 20003 20003 20003 20003 20030 20000 20030 20000 20000 200000 20000 200000000	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10796 10799 10798 10799	243 243 136 137 311 311 311 616 616 616 616 616 616 617 135 135 140 171 30056	regiona relacióny regiona relacióny	Elinoze – Savil Retuita 3/0 3/36,ACSR - 10,8 miles. Convert 5 mile Colossov – Canadian Savitan Norm 68 VV to 138 VV. Convert 6 mile Colossov – Canadian Savitan Norm 68 VV to 138 VV. Convert 6 mile Acidsov – Canadian Savitan Norm 68 VV to 138 VV. Reconculator 16 3 mile Visata – Hazellor Junctobio 58 VV frimm 10 AcCSR 10 336.4 ACCSR for new railing of S3/65 MIVA. Convert 5 mile Acidsov – Farakin Trom 68 VV to 138 VV. Convert 7 mile Acidsov – Nazellor Junctobio 58 VV frimm 10 AcCSR 10 336.4 ACCSR for new railing of S3/65 MIVA. Convert 7 mile Acidsov – Hazellor Acidsov 10 138 VV. Convert 11 mile Dover 5 Acid Minesel – Dover from 68 VV to 138 VV. Convert 11 mile Dover 5 Acidsov 10 06 VV to 138 VV. Convert 11 mile Dover 5 Acidsov 10 06 VV to 138 VV. Convert 11 mile Dover 5 Acidsov 10 06 VV to 138 VV. Convert 12 mile WireC Trimi Lakes – Caladian from 68 VV to 138 VV. Convert 12 mile Mile Dover 7 Nut Lakes from 68 VV to 138 VV. Convert 12 mile Mile Cover 10 00 VV. Elis Dover 10 00 10 00 VV. Elis Do	\$1.248.750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	123110 660110	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scope	01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 02/13/08 02/13/08 02/13/08	Anadaho 138 4V Entrore 59 4V Entrore 59 4V Cul Safethward 138 4V Cul Safethward 138 4V Edgesson 138 4V Meeter 138 4V Washa 58 5V Francilli SW 138 4V Availa 58 5V Francilli SW 138 4V Availa 58 5V Tahl Lakes 138 4V Carter JJ 24 4V Carter JJ 24 4V Carter JJ 25 4V Endals 26 4V Carter JJ 25 4V Endals 26 4V Endals 26 4V Endals 26 4V Francilli SW 15 Endals 26 Endals	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maximum Kerk           Maximum Kerk           Maximum Kerk           Maximum Kerk           Canadian SW 138 kV           Dober 138 kV           Dober 138 kV           Canadian SW 58 kV           Lanac Creek 58 kV           Lanac Syntaps 59 kV           W Norman 69 kV	
20003 20003 20003 20003 20003 20030 20000 20030 20000 20000 200000 20000 200000000	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10796 10799 10798 10799	243 243 136 137 311 311 616 616 616 616 616 616 617 135 135 140 171 30056	regiona relacióny regiona relacióny	Elimore - Paol Esculta 310 336 ACCR - 10.8 miles. Convert 5 mile Context - Inite Context - Number - Context - Number - Context - Sine Context - Number - Context - Sine Context - Number - Context - Sine Context - Sine Context - Number - Context - Sine Sine Sine Context - Sine Sine Context - Sine Sine Sine Context - Sine Sine Sine Context - Sine Sine Sine Sine Context - Sine Sine Sine Sine Sine Sine Sine Sine	\$1.248.750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	123110 123110 0500110 050010 050000 050000 050000 0500000 0500000 0500000000	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scape	01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 02/13/08 02/13/08 02/13/08	Anackino 138 4V Emore 59 4V CU Satichard 138 4V West Norman 138 4V Mest Norman 138 4V Dover 138 4V Cuest Sati 13	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maximum Kerk           Maximum Kerk           Maximum Kerk           Maximum Kerk           Canadian SW 138 kV           Dober 138 kV           Dober 138 kV           Canadian SW 58 kV           Lanac Creek 58 kV           Lanac Syntaps 59 kV           W Norman 69 kV	
20003 20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 19985 20006 20006 20006	10311 10174 10175 10401 10402 10403 10794 10795 10795 10795 10796 10797 10798 10799 10798 10799 10779 10799	243 243 137 311 311 311 616 616 616 616 616 617 135 140 135 140 135 140 30055 30057	regiona relability regiona relability zonal relability Zonal relability	Elimote - Paol Retuita 3/0 336 ACSR - 10.2 miles. Convert 5 mile Colorador au University (UU) satult - Goodscty from 69 KV to 138 KV. Convert 5 mile Colorador au University (UU) satult - Goodscty from 69 KV to 138 KV. Convert 5 mile Colorador au Colorador au University (UV) and the Colorador au Colorador MC Resonautor MS and KV and - Hazattor Junctodor 59 KV from 10 ACSR to 336.4 ACSR for new railing of 53/65 MVA. Convert 5 mile Advata - Hazattor Junctodor 59 KV from 10 ACSR to 336.4 ACSR for new railing of 53/65 MVA. Convert 7 mile Advata - Hazattor Junctodor 59 KV from 10 ACSR to 336.4 ACSR for new railing of 53/65 MVA. Convert 1 mile Noem - Franklin from 69 KV to 138 KV. Convert 11 mile Dover 30/Minesi - Dover from 69 KV to 138 KV. Convert 11 mile Dover 30/Minesi - Dover from 69 KV to 138 KV. Convert 12 mile Mover - Twa Laker from 69 KV to 138 KV. Convert 12 mile Mover - Twa Laker from 69 KV to 138 KV. Convert 12 mile Mes - Casalton from 69 KV to 138 KV. Convert 12 mile Mes - Casalton from 69 KV to 138 KV. Elimite at MI ACSR from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Maxer Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 138 KV. Elimite Advata - Casalton from 60 KV to 138 KV. Elimite Advata - Casalton from 69 KV to 148 KV. Elimite Advata - Casalton from 60 KV to 158 KV. Elimite Advata - Casalton from 60 KV to 158 KV. Elimite Advata - Advata - El	\$1.248.750 \$2.328.750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/0 05/01/0 05/	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scape	0112709 021308 021200 021308 021200 012709 020200 012200 020200 0202000 0202000 0202000 0202000000	Anactine 138 4V Emore 59 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V Watch 238 4V Dover 138 4V Dover 138 4V Dover 138 4V Dover 138 4V Lindsaw 68 4V Lindsaw 69 4V Lindsaw 69 4V ACME	WFEC Singler 138 kV           Georgia 138 kV           Paola 66 kV           Gordsor 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           OUL SW10768 kV           Control 138 kV           OUL SW1078 kV           Down 138 kV           OUL SW 138 kV           Down 138 kV           Rose 36 kV           Carabian SW 65 kV           Hans Springs 69 kV           V Norman 69 kV           Rose Hill 69 kV	
20003 20003 20003 20003 20003 20030 20000 20030 20000 20000 200000 200000000	10311 10174 10175 10401 10402 10403 10794 10795 10796 10796 10796 10799 10798 10799	243 243 136 137 311 311 616 616 616 616 616 616 617 135 135 140 171 30056	regiona relacióny regiona relacióny	Elimote - Paol Esculta 310 336 ACCR - 10.8 miles. Content 5 mile Contrato - Investment CU) satisfant - Goolsky from 69 KV to 138 KV. Contrat 5 mile Contrato - University CU) satisfant - Goolsky from 69 KV to 138 KV. Contrat 5 mile Contrato - Linkara Cultar - Marcella I Bernia equipment. Reconductor 16 3 mile Valanta - Hazellon Junction 69 KV to 138 KV. Contrat 5 mile Analta - Hazellon Junction 69 KV to 138 KV. Contrat 5 mile Analta - Hazellon Junction 69 KV to 104 KV. Contrat 5 mile Analta - Hazellon Junction 69 KV to 104 KV. Contrat 5 mile Analta - Hazellon Junction 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 69 KV to 138 KV. Contrat 1 mile Dover Southwest - Bower from 79 KV to 138 KV. Build new 7 mile WFEC Trun Lawes - Colast Constant 158 KV. Build new 7 mile WFEC Trun Lawes - Colast Constant 158 KV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Datas Southwest 69 kV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 miles from 30 ACSR to 758 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 miles of 10 ACSR to 356 ACSR from Ender Vol Linkare Southwest 69 kV. Reconductor 3 Advector Box from South ACSR from Contral 156 KV Milestor 0 Sereesa. Adv 756 Have Box at a Bellon Instal 15 Marc capacitor at Norton-Nile 69 KV (bas #S3345).	\$1.248.750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	123110 123110 0500110 050010 050000 0500000 050000000000	M M M M M M M M M M M M M M M M M M M	NTC-Mathy Timing & Scape	01/27/09 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 02/13/08 01/27/09 02/13/08 02/13/08 02/13/08	Anackino 138 4V Emore 59 4V CU Satichard 138 4V West Norman 138 4V Mest Norman 138 4V Dover 138 4V Cuest Sati 13	WFEC Surger 138 kV           Georgia 136 kV           Paola 56 kV           Goldsby 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Canadian SW 138 kV           Maximum Kerk           Maximum Kerk           Maximum Kerk           Maximum Kerk           Canadian SW 138 kV           Dober 138 kV           Dober 138 kV           Canadian SW 58 kV           Lanac Creek 58 kV           Lanac Syntaps 59 kV           W Norman 69 kV	
20003 20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 19985 20006 20006 20006	10311 10174 10175 10401 10402 10403 10794 10795 10795 10795 10796 10797 10798 10799 10798 10799 10779 10799	243 243 137 311 311 311 616 616 616 616 616 617 135 140 135 140 135 140 30055 30057	regiona relability regiona relability zonal relability Zonal relability	Elinoze - Paol Retuita 3/0 336 ACGR - 10.2 miles. Convert 5 mile Colossov - Canadian Satisfan from 64 VV to 138 VV. Convert 5 mile Colossov - Canadian Satisfan from 64 VV to 138 VV. Convert 5 mile Colossov - Canadian Satisfan from 64 VV to 138 VV. Convert 5 mile Anales - Hazelfor Junctober 50 VV from 10 ACGR to 336.4 ACGR for new rating of 53/65 MVA. Convert 5 mile Anales - Hazelfor Junctober 50 VV from 10 ACGR to 336.4 ACGR for new rating of 53/65 MVA. Convert 7 mile Anales - Hazelfor Junctober 50 VV from 10 ACGR to 336.4 ACGR for new rating of 53/65 MVA. Convert 7 mile Anales - Hazelfor Junctober 50 VV from 10 ACGR to 336.4 ACGR for new rating of 53/65 MVA. Convert 11 mile Dover 50/00 Miles - Nove from 69 VV to 138 VV. Convert 11 mile Dover 50/00 Miles - Dover from 69 VV to 138 VV. Convert 11 mile Dover 50/00 Miles - Colace Oregoent 138 VV. Convert 12 miles (11 ACGR from 69 VV to 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Elitor ever 7 mile VeC Trian Lakes - Calace Oregoent 138 VV. Resonaultor 3.3 miles from 30 ACGR 1258 ACGR F. Bale A=61MVA. Rate 8=105MVA. Resonaultor 3.3 miles from 30 ACGR 1258 ACGR F. Bale A=61MVA. Rate 8=105MVA. Resonaultor 3.4 miles 4.1 ACGR 10 VC AC 75.6 Miles Calace Oregoent 10 Stavil. Max Calapabort bank, if East ACGR ID Extreme Acade 0.1 Miles = 105MVA. Resonaultor 3.4 miles 10 ACGR 1258 VV DEAGCR F. Bale A=61MVA. Rate 8=105MVA. Resonaultor 3.4 miles 10 ACGR 10 SV VV AC 75.6 Miles David AT Benton Install 5 Miles Calace VVINte 4564 VV. Resonaultor 3.5 miles Chalae - White Junction 656 VV. Resonaultor 3.0 Cacce	\$1.248.750 \$2.328.750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/0 05/01/0 05/	M M M M M M M M M M M M M M M M M M M	NTC-Modfy Timing & Scope	0112709 021308 021200 021308 021200 012709 020200 012200 020200 0202000 0202000 0202000 0202000000	Anactine 138 4V Emore 59 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V Watch 238 4V Dover 138 4V Dover 138 4V Dover 138 4V Dover 138 4V Lindsaw 68 4V Lindsaw 69 4V Lindsaw 69 4V ACME	WFEC Singler 138 kV           Georgia 138 kV           Paola 66 kV           Gordsor 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           OUL SW10768 kV           Control 138 kV           OUL SW1078 kV           Down 138 kV           OUL SW 138 kV           Down 138 kV           Rose 36 kV           Carabian SW 65 kV           Hans Springs 69 kV           V Norman 69 kV           Rose Hill 69 kV	
20003 20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 19985 20006 20006 20006	10311 10174 10175 10401 10402 10403 10794 10795 10795 10795 10796 10797 10798 10799 10798 10799 10779 10799	243 243 137 311 311 311 616 616 616 616 616 617 135 140 135 140 135 140 30055 30057	regiona relability regiona relability zonal relability Zonal relability	Elimore - Paol Esculta 3:0 336 ACCR. 10.8 miles. Content 5 mile Context 5 mile Context 5 miles (200 statist - Goodsbyr from 69 KV to 138 KV. Context 5 mile Context 5 mile Valuation 10 miles for the SIX to 138 KV. Context 5 mile Context 5 mile Valuation - Name form 69 KV to 138 KV. Elitification 10 miles form 5 KV to 138 KV. Context 5 mile Analta - Hazellon Junction 69 KV to 104 KV. Context 5 mile Analta - Hazellon Junction 69 KV to 138 KV. Context 5 mile Analta - Hazellon Junction 69 KV to 138 KV. Context 5 mile Analta - Hazellon Junction 69 KV to 138 KV. Context 1 mile Analta - Hazellon Junction 69 KV to 138 KV. Context 1 mile Analta - Hazellon Junction 69 KV to 138 KV. Context 1 mile Noter - Versit Norman Home 64 KV to 138 KV. Context 1 mile Noter - Versit Norman Home 64 KV to 138 KV. Context 1 mile Noter Alexa - Hazellon Junction 69 KV to 138 KV. Context 1 mile Noter Alexa - Hazellon 100 KV. Evolution 12 Miles Alexa - Ceal Context 100 KV to 138 KV. Build new 7 mile V/FEC Twin Lakes - Cold E Creaceert 138 KV. Eliginae Cr 31 Kin Lakes - Cale Note 1 Alexa - Kale Ranol 160 KU. Reconductor 3 miles of 10 ACSR No 556 ALSCR from Linksav to Linksav Southwest 69 kV. Reconductor 3 miles of 10 ACSR No 556 ALSCR from Linksav to Linksav Southwest 69 kV. Reconductor 3 miles of 10 ACSR No 556 ALSCR from Diractey 10 Nusions 69 kV. Reconductor 3 miles of 10 ACSR No 556 ALSCR from Diractey 10 Nusions 69 kV. Reconductor 3 miles of 10 ACSR No 556 ALSCR from Diractey 10 Nusions 69 kV. Reconductor 3 miles from 30 ACSR No 758 ACSR rate Alexa MVALA, Rate 8 = 106MirA. Reconductor 3 miles from 30 ACSR No 758 ACSR rate Alexa MVALA, Rate 8 = 106MirA. Reconductor 3 A miles for 0 ACSR No 584 ACSR from 69 KV Inc. Reconductor 3 miles from 30 ACSR No 758 ACSR rate Alexa MVALA, Rate 8 = 106MirA. Reconductor 3 A notomile 69 KV (Lake R53361). Instal I Shaher coaped/or bank. Instal I Shaher coaped/or bank. Reconductor 5 AccSR no Notomile 69 KV (Lake R53361). Reconductor 71 Reconductor 11 Smiles of 758 ACSR wtin 156	\$1,248,750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000 \$5,184,701	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/0 05/01/0 05/	M M M M M M M M M M M M M M M M M M M	NTC-Madify Timing & Scape	0112709 021308 021200 021308 021200 012709 020200 012200 020200 0202000 0202000 0202000 0202000000	Anactine 138 4V Emore 59 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V Watch 238 4V Dover 138 4V Dover 138 4V Dover 138 4V Dover 138 4V Lindsaw 68 4V Lindsaw 69 4V Lindsaw 69 4V ACME	WFEC Singler 138 kV           Georgia 138 kV           Paola 66 kV           Gordsor 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           OUL SW10768 kV           Control 138 kV           OUL SW1078 kV           Down 138 kV           OUL SW 138 kV           Down 138 kV           Rose 36 kV           Carabian SW 65 kV           Hans Springs 69 kV           V Norman 69 kV           Rose Hill 69 kV	
20003 20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 19985 20006 20006 20006	10311 10174 10175 10401 10402 10403 10794 10795 10795 10795 10796 10797 10798 10799 10798 10799 10779 10799	243 243 136 137 311 311 311 311 616 616 616 616 616 616	regiona relability regiona relability	Elinoze – Pakil Retuita 3/0 336 ACSR - 10.2 miles. Convert 5 mile Colorsey - Canadian Satisfan from 68 VV to 138 VV. Convert 5 mile Colorsey - Canadian Satisfan from 68 VV to 138 VV. Convert 5 mile Colorsey - Canadian Satisfan from 68 VV to 138 VV. Elizati 1366 RV Transformer a Colorsey from 100 VV to 138 VV. Convert 5 mile Anadian - Hazelfor Junctodor 58 VV from 10 ACSR 10 336.4 ACSR for new rating of 53/65 MVA. Convert 5 mile Anadian - Hazelfor Junctodor 58 VV from 10 ACSR 10 336.4 ACSR for new rating of 53/65 MVA. Convert 7 mile Anadian - Hazelfor Junctodor 58 VV from 10 ACSR 10 336.4 ACSR for new rating of 53/65 MVA. Convert 1 mile Noem - Franklin from 68 VV to 138 VV. Convert 11 mile Dover 30/Minesi - Dover from 68 VV to 138 VV. Convert 11 mile Dover 30/Minesi - Dover from 68 VV to 138 VV. Convert 11 mile Dover 30/Minesi - Dover from 68 VV to 138 VV. Convert 12 mile West Norman - Azone from 68 VV to 138 VV. Convert 12 mile Vice Train Lakes - Calable from 68 VV to 138 VV. Convert 12 mile Vice Train Lakes - Calable from 68 VV to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VV to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VX to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VX to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VX to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VX to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 68 VX to 138 VV. Elizonev 7 mile Vice Train Lakes - Calable from 1000AR Reconductor 3.2 miles from 30 ACSR to 755 ACSR RV to 158 AV. Reconductor 3.2 miles from 30 ACSR to 755 ACSR RV to 158 AVA. Reconductor 3.2 miles from 30 ACSR to 755 ACSR RV to 158 AVA. Reconductor 3.2 miles from 30 ACSR to 755 ACSR RV to 158 AVA. Reconductor 3.2 miles for 30 ACSR to 755 ACSR RV to 158 AVA. Reconductor 10 miles of 755 ACSR RV to 158 AVA. Reconductor 10 miles of 755 ACSR RV to 1590 ACSR RV RVER - The Line Reconduct To achieve a milimum 600 APA - The Line, Reconnuctor 108 miles of 755 ACSR RV to 1	\$1,248,750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000 \$5,184,701	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scope	01/27/09 02/13/08 02/12/09 02/13/08 02/	Anadaho 138 4V Emore 59 4V Emore 59 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V Wahl 58 5V Prannin 50 V 138 4V Acker 138 4V West Norman 138 4V Coder 3V Coder 3	WFEC Singer 138 kV           Georgia 138 kV           Pagia 64 kV           Goldso 138 kV           Goldso 138 kV           Hammet 138 kV           OLL Switchington 65 kV           Hammet 138 kV           Couldso 138 kV           Couldso 138 kV           Case 200 kV           V           Vinte Junction 69 kV           Whate Junction 69 kV	
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20006 19985 20006 20006 20059	10311 10174 10175 10402 10402 10402 10794 10796 10796 10796 10796 10796 107988 10798 10798 10798 10798 10798 10798 10798 10798 10798 10798	243 243 137 311 311 311 616 616 616 616 616 617 135 140 135 140 135 140 30055 30057	regiona relability regiona relability zonal relability Zonal relability	Elimore - Paol Esculta 310 336 ACSR - 10.8 miles. Convert 5 mile Contrast - Inter Control Con	\$1.248.750 \$2.328.750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/0 05/01/0 05/	M M M M M M M M M M M M M M M M M M M	NTC-Modfy Timing & Scope	0112709 021308 021200 021308 021200 012709 020200 012200 020200 0202000 0202000 0202000 0202000000	Anactine 138 4V Emore 59 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V CU Switchward 138 4V Watch 238 4V Dover 138 4V Dover 138 4V Dover 138 4V Dover 138 4V Lindsaw 68 4V Lindsaw 69 4V Lindsaw 69 4V ACME	WFEC Singler 138 kV           Georgia 138 kV           Paola 66 kV           Gordsor 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           Carabian SW 138 kV           OUL SW10768 kV           Control 138 kV           OUL SW1078 kV           Down 138 kV           OUL SW 138 kV           Down 138 kV           Rose 36 kV           Carabian SW 65 kV           Hans Springs 69 kV           V Norman 69 kV           Rose Hill 69 kV	
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20006 19985 20006 20006 20059	10311 10174 10175 10402 10402 10402 10794 10796 10796 10796 10796 10796 107988 10798 10798 10798 10798 10798 10798 10798 10798 10798 10798	243 243 136 137 311 311 311 311 616 616 616 616 616 616	regiona relability regiona relability	Elinoze – Pakil Retuita 3/0 336 ACGR - 10.2 miles. Convert 5 mile Colossov – Canadian Satisfan from 68 VV to 138 VV. Convert 5 mile Colossov – Canadian Satisfan from 68 VV to 138 VV. Convert 5 mile Colossov – Canadian Satisfan from 68 VV to 138 VV. Convert 5 mile Acades – Hazelfor Junctoon 58 VV from 10 ACGR to 336.4 ACGR for new rating of 5365 MVA. Convert 5 mile Acades – Hazelfor Junctoon 58 VV from 10 ACGR to 336.4 ACGR for new rating of 5365 MVA. Convert 5 mile Acades – Hazelfor Junctoon 58 VV from 10 ACGR to 336.4 ACGR for new rating of 5365 MVA. Convert 7 mile Acades – Hazelfor Junctoon 58 VV for 138 VV. Convert 1 mile Noet – Traini Linker 69 VV to 138 VV. Convert 1 mile Noet – Traini Linker from 68 VV to 138 VV. Convert 1 mile Noet – Traini Linker from 68 VV to 138 VV. Convert 1 mile Noet – Traini Linker from 68 VV to 138 VV. Convert 1 mile Noet – Traini Linker from 68 VV to 138 VV. Convert 1 mile Noet – Traini Linker Collect Froeton 188 VV. Convert 1 mile Noet – Traini Linker Collect Froeton 188 VV. Convert 1 mile Noet – Traini Linker – Cale Collect froeton 188 VV. Convert 1 mile Noet – Traini Linker – Cale Collect Froeton 188 VV. Elinker Krime Neet Traini Linker – Cale Collect Froeton 188 VV. Reconcludor 3 milles of 100 ACR 10 556 ACGR froeton 188 AV. Reconcludor 3 milles of 100 ACR 10 556 ACGR froeton 188 AV. ACR 103 Milar Calepator bank at Trains Canadas 115 KV fielbaad of Serveca. ACR 156 Milar Bank at 8 Benton Install Is Mark calepator bank at Trains Canadas 115 KV Instaad of Serveca. ACR 156 Milar Bank at 8 Benton Install Is Mark Calepator bank at Trains Canadas 115 KV Instaad of Serveca. ACR 156 Milar Bank at 8 Benton Install Is Mark Calepator bank at Trains Canadas 115 KV Instaad of Serveca. ACR 156 Milar Bank at 8 Benton Install Is Mark Calepator at XV fortholle 64 VV (Linker 853461). Reculta Use Accelf Acres – Wille Junction 64 VV Inte. Replace existing 210 coper conduct to achieve a minimum 600 ARP – The Linke Reconstudor 105 miles of 758 ACSR Roft 756 ACSR Mil T	\$1,248,750 \$2,328,750 \$912,000 \$2,242,907 \$588,600 \$3,072,000 \$500,000 \$715,000 \$5,184,701	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scope	01/27/09 02/13/08 02/12/09 02/13/08 02/	Anadaho 138 4V Emore 59 4V Emore 59 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V Wahl 58 5V Prannin 50 V 138 4V Acker 138 4V West Norman 138 4V Coder 3V Coder 3	WFEC Singer 138 kV           Georgia 138 kV           Pagia 64 kV           Goldso 138 kV           Goldso 138 kV           Hammet 138 kV           OLL Switchington 65 kV           Hammet 138 kV           Couldso 138 kV           Couldso 138 kV           Case 200 kV           V           Vinte Junction 69 kV           Whate Junction 69 kV	
20003 20003 20003 20003 20003 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20030 20006 19985 20006 20006	102311 10174 10175 10402 10403 10796 10796 10796 10797 10796 10797 10798 10797 10798 10797 10798 10797 10798 10797 10798 10798 10798 10792 10798 10792 10220 10220 10220 10220 10220 10221	243 243 136 137 311 311 311 616 616 616 616 616 616 616	regiona relability regiona relability	Elimore - Paol Esculta 3:0 336 ACCR - 10.8 miles. Content 5 mile Context - Inter Context - Net Cont	\$1.248.750 \$2.328.750 \$912.000 \$2.242.907 \$588.600 \$3.072.000 \$500.000 \$715.000 \$51.844.701 \$2.819,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	123110 123110 660110	M M M M M M M M M M M M M M M M M M M	NTC-Magify Timing & Scope	01/27/09 02/13/08 02/12/09 02/13/08 02/	Anackino 138 4V Emore 59 4V Emore 59 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Prania DN 138 4V Prania DN 138 4V Dover 304 138 4V Tahi Laves 138 4V Dover 304 138 4V Tahi Laves 138 4V Tahi Laves 138 4V Cafe JS 105 4V Salidhavad 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V	WFEC Singer 138 kV           Georgia 138 kV           Pagia 64 kV           Call Shift Site V           Call Site Site V           Call Site Site Site V           Call Site Site Site Site Site V           Call Site Site S	
20003 20003 20003 20003 20003 20003 20030 20050 20000 200500	10311 10174 10175 10402 10402 10402 10794 10796 10796 10796 10796 10796 107988 10798 10798 10798 10798 10798 10798 10798 10798 10798 10798	243 243 136 137 311 311 311 311 616 616 616 616 616 616	regiona relability regiona relability	Elinoze - Pakil Retuita 3/0 336 ACGR - 10.2 mitel. Convert 5 mic Colorand J mices for U(U) satch - disolatory from 69 KV to 138 KV. Carthert 6 mic Colorand J Unkers for U(U) satch - disolatory from 69 KV to 138 KV. Carthert 6 mic Colorand - Transformer a Calabora Linkersky. Tradia 136/68 LV readstrome a Calabora Linkersky. Reconculor 18 3 mic Waata - Hazation J uncload 58 KV from 16 ACGR 10 336 L ACGR for new raing of 53/65 MVA. Convert 7 mic Avers Frainkin Tradi 69 KV to 138 KV. Convert 7 mic Avers Frainkin Tradi 69 KV to 138 KV. Convert 11 mic Dover Southwest. Dover from 69 KV to 138 KV. Convert 11 mic Dover Southwest. Dover from 69 KV to 138 KV. Convert 11 mic Dover Southwest. Dover from 69 KV to 138 KV. Convert 12 mic Mices - Calabora from 69 KV to 138 KV. Convert 13 mic Wine Core 100 EV KV to 138 KV. Convert 12 mic Mices - Calabora from 69 KV to 138 KV. Convert 12 mic Mice Core 100 EV KV to 138 KV. Convert 13 mic Mice Core 100 EV KV to 138 KV. Convert 13 mice Mice Core 032 Corecent 108 KV. Displayer Linker KV to 136 KS LACGR for 138 KV. Elevanduid Core 20 mice Core 032 Corecent 138 KV. Elevanduid Core 100 EV KV 10 138 KV. Reconduid Core 10 EV KV 10 138 KV. Reconduid Core 10 EV KV 10 158 KV 10 EV KV 10 138 KV. Reconduid Core 10 EV KV 10 148	\$1.248.750 \$2.328.750 \$912.000 \$2.242.907 \$588.600 \$3.072.000 \$500.000 \$715.000 \$51.844.701 \$2.819,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	12/31/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10 06/01/10	M M M M M M M M M M M M M M M M M M M	NTC-Modify Timing & Scope	01/27/09 02/13/08 02/12/09 02/13/08 02/	Anadaho 138 4V Emore 59 4V Emore 59 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V CU Selfchwer 138 4V Wahl 58 5V Prannin 50 V 138 4V Acker 138 4V West Norman 138 4V Coder 3V Coder 3	WFEC Singer 138 kV           Georgia 138 kV           Pagia 64 kV           Goldso 138 kV           Goldso 138 kV           Hammet 138 kV           OLL Switchington 65 kV           Hammet 138 kV           Couldso 138 kV           Couldso 138 kV           Case 200 kV           V           Vinte Junction 69 kV           Whate Junction 69 kV	
20003 20003 20003 20003 20003 20030 20050 20000 200500	102311 10174 10175 10402 10403 10796 10796 10796 10797 10796 10797 10798 10797 10798 10797 10798 10797 10798 10797 10798 10798 10798 10792 10798 10792 10220 10220 10220 10220 10220 10221	243 243 136 137 311 311 311 616 616 616 616 616 616 616	regiona relability regiona relability	Elimore - Paol Esculta 3:0 336 ACCR - 10.8 miles. Content 5 mile Context - Inter Context - Net Cont	\$1.248.750 \$2.328.750 \$912.000 \$2.242.907 \$588.600 \$3.072.000 \$500.000 \$715.000 \$51.844.701 \$2.819,000	WFEC WFEC WFEC WFEC WFEC WFEC WFEC WFEC	123110 123110 660110	M M M M M M M M M M M M M M M M M M M	NTC-Madfy Timing & Scape	01/27/09 02/13/08 02/12/09 02/13/08 02/	Anackino 138 4V Emore 59 4V Emore 59 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Cul Salidhavad 138 4V Prania DN 138 4V Prania DN 138 4V Dover 304 138 4V Tahi Laves 138 4V Dover 304 138 4V Tahi Laves 138 4V Tahi Laves 138 4V Cafe JS 105 4V Salidhavad 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V Cafeyville Tap 138 4V	WFEC Singer 138 kV           Georgia 138 kV           Pagia 64 kV           Call Shift Site V           Call Site Site V           Call Site Site Site V           Call Site Site Site Site Site V           Call Site Site S	

				SPP Boad of Directors Approved Appendix A projects January 26, 2010									
	10425	328	zonal - sponsored		\$1,700,000	WR	05/01/10				Moundridge 138 kV	Moundridge 115 kV	2
20006	10219	170	regional reliability	3.53 miles Anzio - Fort Junction Switching Station 115 kV	\$3.639.327	WR	05/01/10	M			Anzlo 115 kV	Fort Junction	1
20033	10809	621	regional reliability	Uprate JEC- E, Manhattan 230 kV line to 100 deg C operation by raising structures.	\$17,085,938	WR		М			E. Manhattan 230 kV	JEC 230 KV	1
20033	10813	625	regional reliability	Rebuild the 2.37 mile Chisholm - Ripley 69 kV line using single 1192.5 ACSR.	\$2,255,250	WR	06/01/10	M			Chishoim 69 kV	Ripley 69 kV	1
20019	10739	578	regional reliability	New 115 kV Line from Knob Hill to Kansas/Nebraska state line.	\$25,751,000	WR	05/01/10	M		11/17/08	Knob Hill 115 kV	Steele City 115 kV	1
20019 20033	10738	577 599	regional reliability	Rebuild 10.3 mile line between Kelly and South Seneca.	\$5,825,000 \$3,890,000	WR WR	12/01/10 12/31/10	M		11/17/08	Kelly 115 kV	South Seneca 115 kV	1
20033	50235	30228	regional reliability transmission service	Tear down and rebuild the 2.72 mile Tecumseh Hil - 27th & Croco 115 kV line as a single circuit. Replace Jumpers to achieve a minimum 600 amp emergency rating.	\$3,890,000 \$115,000	WR	12/31/10	M			Tecumseh Hill 115 kV Tioga 69 kV	27th & Croco 115 kV Chanute TAP 69 kV	1
20059	50235	30229	transmission service	Replace Disconnect Switches, Wavetrap, Breaker, Jumpers with a minimum 2000 amp emergency rating equipment	\$600,000	WR	05/01/10			09/10/09	Coffeyille Tap 138 kV	Dearing 138 kV	1
20059	50238	30224	transmission service	Rebuild approximately 7 miles of line with 954 kcmil ACSR to achieve a minimum 1200 amp emergency rating equipment	\$3.335.500	WR	07/01/10				Green 69 KV	Coffey County No. 4 Vernon 69 kV	1
20059	10711	561	transmission service	Replace Disconnect Switches, Wavetrap, Breaker, Jumpers a minimum 2000 amp emergency rating	\$5,513,000	WR	05/01/10	М			Evans Energy Center South 138 KV	Lakeridge 138 KV	1
20000	19711	001		replace overonnee overonee, wave up, breaker, oungets a minimum zood amp emergency raung	00,010,000	Year 2011	00/01/10			03/10/05	Events Energy Server South 100 KV	Cakenage 100 KV	
						real 2011							
				The proposed line connects to the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From Simulational and the connects of the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From									
	10367	283	Inter-regional	Blackberry the 108 mile 345kV line connects to Chouteau 345 kV bus which connects via a 5 mile 345kV circuit to GRDA 1 bus (GRDA 2 gen). At the Chouleau 345kV bus a 345/161 transformer connects to Chouteau 161kV sub.		AECI	05/01/12				Blackberry 345 KV	Sportsman Acres 345	1
				(GRDA 2 gen). At the Chotteau 345kV bus a 345V of transformer connects to Chotteau TorkV sub.							-		
				The proposed line connects to the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From									
				Blackberry the 108 mile 345kV line connects to Sportsman Acres 345 kV bus which connects via a 5 mile 345kV circuit to GRDA 1									
	10368	283	Inter-regional	bus (GRDA 2 gen). At the Sportsman Acres 345kV bus a 345/161 transformer 161 kV line connects to Chouteau 161kV sub.		AECI	02/01/11				Sportsman Acres 345	GRDA 1 345 KV	1
				The proposed line connects to the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From									
	10000		laine anniount	Blackberry the 108 mile 345kV line connects to Sportsman Acres 345 kV bus which connects via a 5 mile 345kV circuit to GRDA 1			00.04/44				Construction Acres 245 MA	Construction down and the	
	10369	283	Inter-regional	bus (GRDA 2 gen). At the Sportsman Acres 345kV bus a 345/161 transformer 161 kV line connects to Chouteau 161kV sub.	\$57,000,000	AECI	02/01/11				Sportsman Acres 345 kV	Sportsman Acres 161 kV	1
				The proposed line connects to the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From									
	10916	283	Inter-regional	Blackberry the 108 mile 345kV line connects to Sportsman Acres 345 kV bus which connects via a 5 mile 345kV circuit to GRDA 1		AECI	02/01/11				Sportsman Acres 345 kV	Sportsman Acres 161 kV	2
	10510	200	Intel·regional	bus (GRDA 2 gen). At the Sportsman Acres 345kV bus a 345/161 transformer 161 kV line connects to Chouteau 161kV sub.		ALC:	02/01/11				operternal Acres 545 ke	Sponsman Adres for KV	-
							L						
				The proposed line connects to the Morgan - Neosho 345kV line near the Kansas border This is the proposed Blackberry sub. From									
	10781	283	Inter-regional	Blackberry the 108 mile 345kV line connects to Sportsman Acres 345 kV bus which connects via a 5 mile 345kV circuit to GRDA 1		AECI	02/01/11				Sportsman Acres 161kV	Chouteau 161 kV	
	10/01	200	inco regional	bus (GRDA 2 gen). At the Sportsman Acres 345kV bus a 345/161 transformer 161 kV line connects to Chouteau 161kV sub.		1201	02/01/11				operandi / letter forme		
											Barra ( BB b) (	Devi Berlana DEB (36 k)	
	10459 10446	350 349	Generation Interconnect	Replace breaker 3310.	\$277,000 \$7,810,000	AEP AEP	12/31/11 05/01/11				Bann 138 kV	Red Springs REC 138 kV	1
	10446	349	Generation Interconnect Generation Interconnect	Reconductor and convert line to 138 kV and replace switches at Ashdown REC Reconductor line and convert line to 138 kV. Convert Patterson station to breaker-and-a half conflouration.	\$11,431,000	AEP	12/31/11	M			Ashdown REC (Milwood) 138 kV Ashdown REC (Milwood) 138 kV	Okay 138 kV Patterson 138 kV	
	10448	349	Generation Interconnect	Build new MeNab-Turk 115 KV line	\$1,773,000	AEP	12/31/11	M			McNab REC 115 kV	Turk 115 kV	1
	10451	349	Generation Interconnect	Convert 115-69 kV station to 138-69 kV.	\$3,266,000	AEP AEP	12/31/11	M			Okay 69 kV	Okay 138 kV	1
	10452	349	Generation Interconnect	Build two mile, 138 kV, 1590ACSR line section from Turk Sub to existing Okay-Hope 115 kV line and rebuild twelve miles of 115 kV	\$8,170,000	AEP	12/31/11	м			Okay 138 kV	Turk 138 kV	1
			Generation Interconnect	line to Okay Sub to 138 kV, 1590 ACSR, to form a Turk-Okay 138 kV line							Okay 130 ku		
	10457	349	Generation Interconnect	Build Turk 138-115 kV station and relocate autotransformer (and spare) from Patterson to this new Turk station.	\$7,806,000	AEP	12/31/11	M			Turk 115 kV	Turk 138 kV	1
20027	10586	452	regional reliability		\$350,000	AEP	05/01/11	м		01/27/09	Whitney 138 kV	Whitney 69 kV	18.2
				Replace one breaker and four switches.									142
20016	10449	349	transmission service	Reconductor about 0.5 miles of 665 ACSR with 1590 ACSR	\$540,000	AEP	12/31/11	M			McNab REC 115 kV	Turk 115 kV	1
20016	10450	349 446	transmission service	Reconductor 3.55 miles of 666 ACSR with 1590 ACSR Rebuild approximately 13 miles of line with 1590 ACSR to achieve a minimum 2000 Amp emergency rating	\$2,170,000	AEP	12/31/11	м			McNab REC 115 kV North Bartlesville 138 kV	Hope 115 KV Coffeyille Tap 138 kV	1
20048	10578		transmission service	Rebuild approximately 15 miles of line with 1590 ACS to achieve a minimum 2000 Amp emergency rating & reset relays at Bartlesville	\$13,100,000	AEP	06/01/11						
20048	10588	454	transmission service	Southeast accordinate	\$8,400,000	AEP	05/01/11			09/18/09	Bartlesville Southeast 138 kV	North Bartlesville 138 kV	1
	10373	287	zonal - sponsored		\$11,299,000	DETEC	05/01/11				Etole 138 kV	Chireno 138 kV	1
19970	10373 10644	287 499	transmission service	Buid 12 miles of 138 kV from Ebile - Onlineno Resizea- Auto transformer al ORONGO 110 kWn 150 MVA rated Auto transformer due to increased generation available Resonautor 11.9 miles of Oronogo Jot. to Riverton 151kV Ckt. 1 from 556 ACSR to 795 ACSR, ohange CT settings @ Oronogo, and anothone university.	\$11,299,000 \$4,000,000	DETEC EDE	06/01/11 06/01/11	M		01/10/08	OR0110 5 161 IV	Chireno 138 kV ORO110 2 69 kV	1
19970	10730	352	transmission service	Reconductor 11.9 miles of Oronogo Jct. to Riverton 161kV Ckt. 1 from 556 ACSR to 795 ACSR, change CT settings @ Oronogo,	\$5,750,000	EDE	05/01/11	м		01/10/08	Sub 110 - Oronogo Jct.	Sub 167 - Riverton	1
13570	10100	002		and replace wavecap.	00,100,000	202	00/01/11	- m		01/10/00	oub no orange to.	oub for - fate of	
			had an an advantation	Entergy Planning has identified this proposed project as installing a new switching station, Grandview, on the existing 161 kV line									
	10370	284	Inter-regional	between Table Rock Dam and Eureka Springs substation and constructing a new 161 kV line between Grandview and the existing	\$6,000,000	EES	06/01/11	06/01/10			Grandview 161 kV	Osage 161 kV	1
				Osage Creek substation.									_
20034	10830	634	regional reliability	Tap the Montrose - LomaVista 161 kV Line into KC South 161 kV substation. This project is an alternative to replace the reconductor	\$2,369,625	GMO	11/01/11	м		01/27/09	Loma Vista 161 kV	KC South 161 kV	1
				project of the Duncan Rd - Blue Spring East and Marlin City - Grandview East 161 kV lines.									
	10431 10428	334 331	zonal - sponsored	Radial Line From Greenwood to a new distribution sub at Lone Jack. Tap Clinton AECI (300071) to Clinton MIPU (541242) with new Clinton bus and tie in existing Clinton transformer into new bus.	\$7.095.402	GMO GMO	05/01/11 05/01/11	M			Lone Jack 161 kV	Greenwood 161 kV	1
	10428	331	zonal - sponsored	Tap Clinton AECI (30071) to Clinton MIPU (341242) with new Clinton bus and tie in existing Clinton transformer into new bus.	\$2,418,750	GMO	05/01/11				Clinton 161 kV		<u> </u>
20034	10854	650	regional reliability	Tap Stilweil - Archie Junction 161 kV line into South Harper 161 kV sub and make it two new 161 kV sections: Stilweil - South Harper and Archie Junction - South Harper.	\$2,259,673	GMO	05/01/11	M		01/27/09	Stilweil 161 kV	Archie 161 kV	1
	50194	30187	regional reliability	Add 20 Mvar papacitor bank at Adrian 161 kV.	5810.000	GMO	+	06/01/11	NTC		Adrian 161kV		
20053	50224	30220	regional reliability	Add 50 Mvar cap bank at Blue Springs East	\$1,400,000	GMO	05/01/11			09/18/09	Blue Springs East 161 kV		
	10361	278	zonal - sponsored	161kV Tap of Longview to Grandview East	\$893,868	GMO	05/01/11	M			Longview 161 kV	Sampson 161 kV	1
	10362 10355	278 273	zonal - sponsored	161kV Tap of Longview to Grandview East	\$0	GMO	05/01/11 05/01/11	M			Sampson 161 kV	Grandvlew East 161 kV	1
	10356	273	zonal - sponsored	161kV Tap of Nashua to Liberty West	\$1,350,000	GMO	05/01/11	M			Cookingham 161 kV	Liberty West 161 kV	-1
20056	10357	273 30223	zonal - sponsored transmission service	161kV Tap of Nashua to Liberty West Reconductor the line from 1192 ACSR to 1192 ACSS and rebuild the line terminals to 2000 amp capability	\$4,400,000	GMO GMO	05/01/11 05/01/11	M		09/18/09	Nashua 161 kV ST Joe 161 KV	Cookingham 161 kV Cook 161 KV	1
20056	50227	30223	regional reliability	Install 21.8 Mvar capacitor at Jay 69 kV substation.	\$4,400,000 \$800,000	GRDA	06/01/11	м			Jay Gr2 69 kV	SOUR TOTING	<del></del>
20001	10511	393	regional reliability	Add 50MVA 161/69 kV transformer #2 at Afton.	\$2,500,000	GRDA	05/01/11	06/01/10	NTC-Modify Timing	02/13/08	Afton161 kV	Afton 69 kV	1
	10390		zonal - sponsored	Tap the GRDA 1-Flint Creek 345 kV line and build a 345/161 transformer. Then build a 161 kV line down to Sloam Springs. Rebuild approximately 22 miles of line with 795 ACSR	\$8,019,000 \$10,450,000	GRDA	12/01/11 05/01/11	M			Siloam Springs Tap 345 kV Kerr 151 kV	Siloam Springs Tap 161 kV Pensacola 115 kV	1
20050 20051		302 394 30217	regional reliability	Rebuild approximately 22 miles of line with 795 ACSR	\$10,450,000	GRDA	05/01/11					Pensacola 115 kV	1
	50221		transmission service	Add 20 Mvar cap bank to make a total of 70 Mvar at Craig 161kV Reconductor line and upgrade terminal equipment for 2000 amps	\$50,000	KCPL	05/01/11			09/18/09	Craig 161 kV		
20051 20032	50222	30218 30176	transmission service	Reconcluctor line and upgrade terminal equipment for 2000 amps	\$2,200,000 \$300.000	KCPL	06/01/11 06/01/11				Stiwell 161 kV	Redel 161 kV	1
20032	50184 50197	30176	regional reliability regional reliability	Install 5 Mvar Cap at Kinsley 115 kV.		MIDW	05/01/11	06/01/11	NTC-Modify Scope NTC	01/27/09	Kinsley 115 kV		<b></b>
20007	50096	30090	regional reliability	Install 5 Mvar capacitor bank at Pawnee 115 kV. Add 9.6 Mvar capacitor at Russell 115 kV.	\$300,000 \$1,300,000	MIDW	05/01/11	06/01/11 M	nite	02/13/08	Pawnee 115 kV Russell 115 kV		
20001	50211	30204	regional reliability	Install 10.8 Mvar capacitor bank at Valentine 115 kV.	\$1,000,000	NPPD	05/01/11	06/01/11	NTC	001000	Valentine 115 kV		
+	10924	609	regional reliability	Build new 161-kV substation Sub 1341. Remove 0.06 mile of 161 kV line from Sub 1251- Sub 1305.		OPPD	12/31/11	M	NTC		SUB 1341 161 kV		
	10925	609	regional reliability	Tap 161-kV line from Sub 1251 to Sub 1305 and route it into and out of new 161-kV substation Sub 1341.	\$16,300,000	OPPD	12/31/11	M	NTC		SUB 1341 161 kV	SUB 1251 161 kV	1
	10926	609	regional reliability	Tap 161-kV line from Sub 1251 to Sub 1305 and route it into and out of new 161-kV substation Sub 1341.		OPPD	12/31/11	M	NTC		SUB 1341 161 kV	SUB 1305 161 kV	1
	50148	304	zonal - sponsored	Add 9 Mvar of emergency capacitors	\$264,000	OGE	03/01/11				Madili Industries 138 kV		
	10392	310	zonal - sponsored	Conversion from 69kV to 161kV	\$543.000	OGE	03/31/11	M			Great Lakes Carbon 161 kV	Altus 161 kV	1
	10394	310 310	zonal - sponsored	Conversion from 69KV to 161KV	\$2,994,000 \$522,000	OGE	03/31/11 03/31/11	M			lgo 161 KV	Noark 161 kV Great Lakes Carbon 161 kV	1
+	11190	895	zonal - sponsored zonal - sponsored	Conversion from 69kV to 161kV Three ferminal line will be unpracted to 2000A with breakers. Limition equinment will be 795AS33 conductor.	\$1,300,000	OGE	03/31/11	M			Noark 161 kV Stonewall 138 kV	Great Lakes Carbon 161 kV Remington Park 138 kV	1
20017	50165	30158	transmission service	Three terminal line will be upgraded to 2000A with breakers. Limiting equipment will be 795AS33 conductor. Replace 4.65 miles of line with 477AS33	\$1,400,000	OGE	05/01/11	M		01/16/09	Stonewall138 kV Rocky Point 69 kV	Ardmore 69 kV	
20017	50166 50170	30158 30162	transmission service	Replace wavetrap 800A at Uniroval	\$1,400,000 \$50,000	OGE	05/01/11 05/01/11	M		01/16/09	Sunnyside 138 kV Dillard 138 kV	Uniroyal 138 kV	1
20017	50167	30159	transmission service	Replace Differential Relaying	\$300.000	OGE	05/01/11	M		01/16/09	Dillard 136 kV	Healdton Tap 138 KV	1

				SPP Boad of Directors Approved Appendix A projects January 26, 2010									
20029	10792 & 10793	615	regional reliability	Convert 13.64 miles of 69 kV to 138 kV from Crescent to Cottonwood Creek and Install terminal equipment at Cottonwood Creek, completing loop from Crescent to Twin Lakes (WFEC).	\$5,404,250	OGE	05/01/11	м		01/27/09	Crescent 138 kV	Cottonwood Creek 138 kV	1
	11188	895	zonal - sponsored	Bell Cow Sub is delayed until 2011. Install Bell Cow sub and associated lines, remove chandler sub.		OGE	05/30/11	M			Keystone West 138 kV	Bell Cow 138 kV	1
	11189	896	zonal - sponsored zonal - sponsored	Beil Cow Sub is delayed until 2011. Install Beil Cow sub and associated lines, remove chandler sub.		OGE	05/30/11	M			Warwick 138 kV	Bell Cow 138 kV	1
	10731 10732	304 304	zonal - sponsored	At Caney Creek remove 2 existing line terminals to the north and expand the 138 kV bus north into a ring bus Construct 25 miles of 138 kV of 795AS33 line from the new Johnson County sub to Caney Creek.		OGE	05/01/11 05/01/11	M			Caney Creek 138 kV Johnson County 138 kV	Caney Creek 138 kV	1
	10733	304	zonal - sponsored	Build a new 345 EHV substation in the Sunnyside to Pittsburg line. Install a 400 MVA transformer with 3-345kv breakers in a ring bus		OGE	05/01/11	м			Johnson County 345 kV	Johnson County 138 kV	1
				and 4-138kv breakers in a ring bus at new Johnson County sub.				M					
	10734 10735	304 304	zonal - sponsored zonal - sponsored	Replace relays at Sunnyside 345 kV Replace relays at Pittsburg 345 kV	\$32,975,000	OGE	05/01/11 05/01/11	M			Sunnyside 345 kV Johnson County 345 kV	Johnson County 345 kV Pittsburg 345 kV	1
	10820	304	zonal - sponsored	Tap the MIICreek to Russett 138 kV Into the New Johnson County substation		OGE	05/01/13	M			Johnson County 138 kV	Milcreek	1
	10821	304	zonal - sponsored	Tap the MIICreek to Russett 138 kV into the New Johnson County substation and reconductor Jonson County to Russett Sub with		OGE	06/01/13	м			Johnson County 138 kV	Russett 138 kV 138 kV	1
				795 A\$33							,		
	10747	582	zonal - sponsored	Instal Terminal equipment to remove Three terminal line Instal Terminal equipment to remove Three terminal line	\$1,900,000	OGE	05/01/11	M			Cottonwood Creek 138 kV Arcadia 138 kV	Arcadla 138 kV Garber 138 kV	1
20041	10748 10946	582 709	zonal - sponsored Balanced Portfolio	Tap Lawton East Side to Cimarron 345 kV line at Anadarko and build substation. Install a 345/138 kV transformer in substation.	\$15,000,000	OGE	05/01/11 12/31/11	M		06/19/09	Anadarko (Gracemont) 345 kV	Gracemont 138 kV	1
-								м					<u> </u>
20002	10514	396	regional reliability	Install a 138 kV breaker at Bodie to close the normally open switch. Breaker connects 515155 Bodie 138 kV to 515156 Bodie138 kV.	\$1,000,000	OGE	10/01/11			02/13/08	Bodle 138 kV	Bodle 138 kV	1
	50247 10214	30235	regional reliability	Install 2nd 115 kV 12 Mvar cap bank at Johnson Corner substation.	\$650,000 \$10,500,000	SEPC	00.04.04	06/01/11 M	NTC		Johnson Comer 115 kV	Observed 445 MM	
20007	10214		zonal - sponsored regional reliability	Build new 35 mile Philipsburg - Rhoades 115 kV. Rebuild 12 mile Holcomb - Pivmell 115 kV.	\$10,500,000	SEPC SEPC SEPC	09/01/11 09/01/11	M		02/13/08	Philipsburg 115 kV Holcomb 115 kV	Rhoades 115 kV Plymell 115 kV	1
20007 20014	10215 10480	166 367	regional reliability	Rebuild 15 mile Holcomb - Ploneer Tap 115kV.	\$3,650,000 \$3,200,000	SEPC	09/01/11	M		02/13/08 09/18/08	Plymell 115 kV	Ploneer Tap 115 kV	1
	50259	30246	regional reliability	Install 2 Blocks of 7.2 Mvar capacitor bank at Kress 69 kV.	\$583,200	SPS		06/01/11	NTC		Kress Rural 69 kV		
	11040	791 824	regional reliability	Tap the Potter Interchange - Plant X Station 230 kV line for new Newhart Substation Install 230/115 kV 150/173 MVA transformer.	\$11,250,000 \$11,250,000	SPS SPS	12/22/11	06/01/10	NTC NTC		Newhart 230 kV	Newhart 115 kV	1
	11090	824	regional reliability regional reliability	New 345/230 kV transformer rated 515/560 MVA at Hobbs Interchange. New 345/138 kV transformer rated 400/440 MVA at Midland.	\$11,250,000	SPS	12/22/11 12/22/11	06/01/10	NTC		Hobbs Interchange 230 kV Midland 345 kV	Hobbs Interchange 345 kV Midland 138 kV	1
	11029	779	regional reliability	Reconductor 6.15 mile Maddox - Sanger Switching Station 115kV line for 226/239 MVA rating.	\$3,000,000	SPS	06/25/11	06/01/10	NTC		Maddox Station 115 kV	Sanger Switching Station 115 kV	1
	11019	774	regional reliability	New Tap to new Cherry 230/115 KV Transformer.	\$112,500	SPS	08/24/11	06/01/10	NTC		Cherry Sub 230 kV	Potter County Interchange 230 kV	1
0000	11020 10757	774	regional reliability	New 230/115 kV Autotransformer at Cherry Substation.	\$4,905,000	SPS SPS	08/24/11	06/01/10	NTC		Cherry Sub 230 kV	Cherry Sub 115 kV	1
20031		590 155	zonal - sponsored	Convert 8 miles of 69 kV to 115 kV from Carisbad Interchange - Ocotilio. Convert Ocotilio substation to 115 kV.	\$1,222,843		05/01/11	06/01/10 M		01/27/09	Carlsbad Interchange 115 kV Pringle Interchange 230 kV	Ocotilio Sub 115 kV Hitchland 230 kV	1
20004 20004 20004	10325 10330	156	regional reliability	Add 230 KV line from Pringle to Hilchland - 541 MVA. Add 230 KV line from Hitchland to Ochilitee - 541 MVA.	\$11,922,643 \$10,766,250	SPS SPS	06/01/11 06/01/11	M		02/13/08	Hitchland 230 kV Perryton Interchange 115 kV	Ochiltree 230 kV	1
20004	10331	156	regional reliability	Add 2-Winding 230/115 kV transformer at Ochilitree – 172.5 MVA	\$5,846,295	SPS	05/01/11	M		02/13/08	Perryton Interchange 115 kV	Ochiltree 230 kV	1
	11033	783	regional reliability	Install second 230/115 kV transformer in Randall substation.	\$11,250,000	SPS	08/24/11 05/01/11	06/01/10	NTC		Randall County Interchange 230 kV	Randali County Interchange 115 kV	2
20031	10622	632	regional reliability	Tap line from Tenneco - Boardman Tap 69 KV and add new 75/75 MVA 115/69 KV transformer at new Legacy interchange substation.	\$3,937,500	SPS	06/01/11	M		01/27/09	Legacy Interchange 115 kV (new Interchange a	Boardman Tap 69 kV	1
20031	10823	632	regional reliability	Build new 6 mile 115 kV line from Doss Interchange - Legacy Interchange.	\$3,375,000	SPS	05/01/11	м		01/27/09	Doss Interchange 115 kV	Legacy Interchange 115 kV (new Interchange and sub)	1
20031	10824	632	regional reliability	Build new 5.5 mile 115 kV line from Gaines County Interchange - Legacy Interchange.	\$3,093,750	SPS	05/01/11	М		01/27/09	Gaines County Interchange 115 kV	Legacy Interchange 115 kV (new Interchange and sub)	1
20031	10825	633	regional reliability	Tap line 69 kV from Navajo No. 2 - Navajo No. 4, tap line 115 kV from Navajo No. 3 - Navajo No. 4, and Install Eagle Creek Substation and 115/69 kV transformer	\$3,285,000	SPS	04/15/11	м		01/27/09	Eagle Creek 69 kV (new sub)	Eagle Creek 115 kV (new sub)	1
20031	10825	633	regional reliability	and 115/69 kV transromer. Build new 0.5 mile 115 kV line from new Navajo No. 5 substation - Navajo No. 4 substation 115 kV.	\$281,250	SPS	04/15/11	м			Navajo No.5 Sub 115 kV (new sub)	Navajo No.4 Sub 115 kV	1
20031 20031	10527 10528	633 633	regional reliability	Build new 0.5 mle 115 kV line from new Navajo No. 5 substation - Navajo No. 3 substation 115 kV.	\$261,250 \$1,350,000	SPS SPS	04/15/11 04/15/11	M		01/27/09	Navajo No.5 Sub 115 kV (new sub)	Navajo No.3 Sub 115 kV Artesla South Rural Sub 69 kV	1
20031	10828	633	regional reliability	Build new 3 mile 69 kV line from Artesia Town - Artesia South Rural 69 kV.	\$1,350,000	SPS	04/15/11	M		01/27/09	Artesia Town Sub 69 kV	Artesia South Rural Sub 69 kV	1
20031	10629	696	regional reliability	Convert 11.6 miles of 59 kV line to 115 kV from Chaves County - Price - Central Valley REC-Plne Lodge - Capitan - Roswell. SPS- provided mitigation was verified by SPP staff until 12/2012 when the conversion will be completed.	\$4,716,600	SPS	05/01/11	06/01/11		01/27/09	Chaves County Interchange 115 kV	Roswell interchange 115 kV	1
	11035	786	regional reliability	Reconductor 3.35 mile Maddox - Monument CKT 1 115 kV with 795 ACSR.	\$1,417,500	SPS	06/25/11	06/01/11	NTC		Maddox Station 115 kV	Monument Sub 115 KV	1
19987	1096	829 150	regional reliability regional reliability	Install second 115/69 kV transformer rated 75/86 MVA at Kingsmill. Upgrade #2 Transformer	\$1,250,000	SPS	12/22/11	06/01/11	NTC	02/02/07	Kingsmill 69 kV Kress 69 kV	Kingsmill 115 kV Kress 115 kV	2
19901	11195	857	regional reliability	Reconductor EAST PLANT-PIERCE 1.06 miles 115 kV to 795 ACSR line	\$596,250	SPS			NTC	02/02/07	East Plant 115 kV	Pierce 115 kV	1
	10741	580	regional reliability - non OATT	Replace Paragould auto transformers 1 and 2 with 70 MVA units.	\$3,150,000	SWPA		06/01/11 12/01/11			Paragould 161 kV	Paragould 69 KV	18.2
	10944	612		Replace wave trap, disconnect switches, current transformers, and breaker at Dardanelle	\$165,000	SWPA	05/01/11	06/01/10			Dardanelle 161 kV	Russellville South 161 kV	1
20044	10938	705	Balanced Portfolio	Tap the existing WFEC Anadarko - Washita 138 kV line into the new Gracemont 345 kV substation.	\$200,000	WFEC	12/31/11	M			Anadarko (Gracemont) Tap 138 kV		1
19951 20003	10467 10471	357 361	transmission service regional reliability	Install 2nd 112 MVA auto In parallel with existing Unit Upgrade 7 miles to 795 ACSR from Fletcher SW to Marlow Junction 69 kV.	\$2,000,000 \$2,000,000	WFEC WFEC	06/01/11 06/01/11	M		01/02/07 02/13/08	Anadarko 138 kV Fletcher 69 kV	Anadarko 69 kV Marlow Jct 69 kV	2
20005	11114	845	regional reliability	Upgrade 7 miles of 55 miles and 10 miles and 50 miles of 50 miles	\$225.000	WFEC	00/01/11	06/01/11	NTC	02/13/00	Snyder 69 kV	Tipton 69 kV	1
20003	10303	238	regional reliability	WFEC will build a double circuit 138 kV line, approximately 6.5 miles long, from AEP's Atoka substation to the south and looping into the WFEC Tupelo-Lane 138 kV line - Atoka to Tupelo line.	\$8,265,000	WFEC	01/01/11	М		02/13/08	Atoka West 138 kV	Tupelo (WFEC) 138 kV	1
20003	10304	238	regional reliability	WFEC will build a double circuit 138 kV line, approximately 6.5 miles long, from AEP's Atoka substation to the south and looping into	10,200,000	WFEC	01/01/11	м		02/13/08	Atoka East 138 kV	Lane (WFEC) 138 kV	1
20059	50243	30232	transmission service	the WFEC Tupelo-Lane 138 kV line - Aloka to Lane line. Add 138 kV 30 Mvar Cap bank at Timber	\$1,215,000	WR	05/01/11	+		09/18/09	Timber 138 kV		+
20059	50244	30233	transmission service	Add 69 kV 15 Mvar Cap bank at Tloga	\$607,500	WR	05/01/11			09/18/09	Tioga 69 kV		
	50291	30253	zonal - sponsored	one stage of 9.6 Mvar	\$384,000	WR	05/01/11	M			Riley 115 kV		
	50292	30254	zonal - sponsored zonal - sponsored	Install 2nd block of 76.8 Mvar one state of 10.8 Mvar	\$3,072,000	WR WR	12/01/11	M			Rose Hill 138 KV Butter County No. 5 Europe 50 kV		+
20033	50293 10349	30255 266	regional reliability	Rebuild 0.23 mile Circle - HEC GT 115 kV line.	\$432,000	WR	05/01/11 05/01/11	M		01/27/09	Butler County No. 5-Furley 69 kV Hutchinson Gas Turbine Station 115 kV	Circle 115 kV	1
20033 20033	10349 10636	491	regional reliability	Rebuild 2.9 mile Bismark - Farmer's Consumer Co-op 115 kV.	\$2,085,000	WR	06/01/11	06/01/11	NTC-Modify Timing	01/27/09	Bismark 115 kV	Farmer's Consumer Co-op 115 kV	1
20006	10482	369 370	regional reliability	Rebuild SW Lawrence - Wakarusa 115 kV line. Rebuild 1.53 miles Co-op-Wakarusa 115 kV line	\$2,000,000	WR	06/01/11	M		02/13/08 02/13/08	SW Lawrence 115 kV	Wakarusa 115 KV	1
20006	10483 10865	660	regional reliability regional reliability	Repuilo 1.53 miles Co-op-Wakarusa 115 KV line Tear down and rebuild 7.88 mile Gill - Clearwater 138 KV.	\$760,000 \$3,324,375	WR	05/01/11	06/01/11	NTC	u2/13/06	Farmer's Consumer Co-op 115 kV GIII W4 138 kV	Wakarusa 115 kV Clearwater 138 kV	1
20033	10638	493	regional reliability	Rebuild Jarbaio - Stranger Ckt 2 7.1 miles of 115 kV and tap the existing Jarbaio - Northwest Leavenworth line into Stranger.		WR	05/01/11	M		01/27/09	Jarbalo 115 kV	Stranger Creek 115	2
20033	10639	493	regional reliability	Rebuild Stranger - Northwest Leavenworth 6.5 miles of 115 kV and tap existing Jarbaio - Northwest Leavenworth line into Stranger.	\$8,050,000	WR	05/01/11	м		01/27/09	Stranger Creek 115	NW Leavenworth	1
				Tap KSU - Wildcat 115 KV into Northwest Manhattan.	\$17,427,500	WR		M				Wildcat 115 kV	1
20033	10806	618 618	regional reliability regional reliability	Tap the Concordia - East Manhattan 230 kV line and build new Northwest Manhattan 230/115 kV substation.	\$17,437,500 \$11,250,000	WR	12/01/11	M		01/27/09	KSU Campus 115 KV Concordia 230 kV	East Manhattan 230 kV	1
20059	50239	30224	transmission service	Rebuild approximately 8.5 miles of line with 954-KCM ACSR to achieve a minimum 600 amp emergency rating.	\$3,811,500	WR	12/01/11	06/01/11		09/18/09	Lehigh Tap 69 kV	Owl Creek 69 KV	1
20059	50232	30224	transmission service	Rebuild approximately 3 miles of line with 954 kcmil ACSR to achieve a minimum 600 amp emergency rating.	\$1,418,500	WR	04/01/11			09/18/09	Athens Switching Station 69 kV	Owl Creek 69 KV	1
20059	50241	30230	transmission service	Replace bus and Jumpers at NE Parsons 138 kV substation Tab Bere Plane-Oxford 138 kV line, build a 3-breaker ring bus switching station, build approximately 12 miles 138 kV line from	\$250,000	WR	05/01/11			09/18/09	Neosho 138 KV	Northeast Parsons 138 kV	1
20059	50242	30231	Zonal Reliability	Sumner County 138 kV to Timber Junction 138 kV, and Install Timber Junction, 138-69 kV 100 MVA transformer with LTC.	\$9,360,000	WR	05/01/11	1		09/18/09	Timber Junction 138 kV	Summer County Tap 138 KV	1
20059	50245	30224	transmission service	Rebuild approximately 5 miles of line with 954-KCM ACSR to achieve a minimum 1200 amp emergency rating.	\$2,425,500	WR	01/01/11			09/18/09	Coffey County No. 4 Vernon 69 kV	Athens Switching Station 69 kV	1
20059	10810	622	Zonal Reliability	Rebuild approximately 5.5 mile Rose Hill Junction-Richland	\$2,815,000	WR	05/01/11			09/18/09	Roshe Hill Junction 69 kV	Richland 69 kV	1
20033	10767	600	regional reliability	Tear down and rebuild the 3.43 mile 27th & Croco - 41st & California 115 kV line as a single circuit. Tear down/rebuild 1.01 miles of California - Oliver 50 kV line registring 477 keept ACCB conductor with 954 keept ACCB conductor.	\$3,227,500	WR	12/31/11	M		01/27/09	27TH & Croco Junction 115 KV	41ST & California 115 KV	1
20006	10417	321	regional reliability	Tear downirebuild 191-mies of Dakiaan - Olive 68 kV line replacing 477 kcmi ACSR conductor with 954 kcmi ACSR conductor. Limit would be 0.2-mile 750 kcmii CU underground cable. Tear down and rebuild 7.3-mile Halstad - hud Creek 69 kV line. Replace 336.4 kcmi ACSR conductor with 954 kcmil ACSR	\$1,292,500	WR	06/01/11	М		02/13/08	Oaklawn 69 kV	Oliver 69 kV	1
20033	10350	267	regional reliability	conductor and replace terminal equipment at substations.	\$2,500,000	WR	05/01/11	05/01/11	NTC-Modify Timing NTC-Modify Timing	01/27/09	Halstead 69 kV Mud Creek Junction 69 kV	Mud Creek Junction 69 KV	1
20033	10351	267	regional reliability	Rebuild 1.0 mile Mud Creek Junction - Mid-American Junction 69 kV line. Replace 336.4 kcml ACSR conductor with 954 kcml	\$360,000	WR	05/01/11	06/01/11				Mid-American Junction 69 kV	

100         100         100         space of the state of t					SPP Boad of Directors Approved Appendix A projects January 26, 2010									
No.4         April         No.40         April         No.40         April	20033	10352	267	regional reliability		\$1,300,000	WR	05/01/11	06/01/11	NTC-Modify Timing	01/27/09	Mid-American Junction 69 kV	Newton 69 kV	1
Image         Image <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>Year 2012</th><th>2</th><th></th><th></th><th></th><th></th><th></th><th></th></th<>							Year 2012	2						
Image     Mode	20015	50151		transmission service			AECC				01/16/09	Turk 115	McNab REC 115 kV	1
Section         Section <t< td=""><td>20015</td><td>10460</td><td>351</td><td></td><td>Reconductor line to 1590 ACSR the Hope-Fution line. Build at 138 and operate at 115 kV</td><td>\$1,512,000</td><td>AECC</td><td>04/01/12</td><td></td><td></td><td>01/16/09</td><td>Fulton 115 kV</td><td>Hope 115 KV</td><td>1</td></t<>	20015	10460	351		Reconductor line to 1590 ACSR the Hope-Fution line. Build at 138 and operate at 115 kV	\$1,512,000	AECC	04/01/12			01/16/09	Fulton 115 kV	Hope 115 KV	1
Subset	20015	10461	351	transmission service	Upgrade Fulton Switching Station	\$440,000		04/01/12	M		01/16/09			
Sub     Sub </td <td></td> <td></td> <td></td> <td></td> <td>Add tap and switches for new delivery point along 69 kV line from S07187 Midland to did 507185 Excelsion station site.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>01/10/00</td> <td>Sugar Loaf 69 KV</td> <td>Barrish Managerian - Ballah Shini I</td> <td>-</td>					Add tap and switches for new delivery point along 69 kV line from S07187 Midland to did 507185 Excelsion station site.						01/10/00	Sugar Loaf 69 KV	Barrish Managerian - Ballah Shini I	-
Image         Image <th< td=""><td>20016</td><td>50165</td><td>30157</td><td></td><td>Rebuild 3.32 miles of 200 ACSR with 750 ACSR, replace 05 KV switches, jumpers, and reset CTs and reavis at resarkana Plant. Change out the 510 Cull tumpers of Texarkana Plant.</td><td>\$8,193,000</td><td>AEP</td><td>04/01/12</td><td>M</td><td></td><td></td><td></td><td></td><td>- 1</td></th<>	20016	50165	30157		Rebuild 3.32 miles of 200 ACSR with 750 ACSR, replace 05 KV switches, jumpers, and reset CTs and reavis at resarkana Plant. Change out the 510 Cull tumpers of Texarkana Plant.	\$8,193,000	AEP	04/01/12	M					- 1
Set         Set <td>20016</td> <td>50163</td> <td>30155</td> <td></td> <td>Replace 69 KV switches.</td> <td></td> <td></td> <td>04/01/12</td> <td>M</td> <td></td> <td>01/16/09</td> <td>Okav 69 KV</td> <td></td> <td>1</td>	20016	50163	30155		Replace 69 KV switches.			04/01/12	M		01/16/09	Okav 69 KV		1
SumeNo	20048	50156	30148		Replace 69 kV switch at Lone Star Ordinance Tap with a minimum 800 amp emergency rating	\$273,400		06/01/12			09/18/09	Bann 69 kV		1
SumeNo	20016	50160	30152	transmission service		\$456,000	AEP	05/01/12			01/16/09	Powell Street 138 kV		1
SumeNo	20016	50148	30142	transmission service	Build approximately 33 miles of of 2-954 ACSR from Turk to NW Texarkana.			04/01/12			01/16/09	Turk 345 kV	NW Texarkana 345 kV	1
Alton         Alton <th< td=""><td>20016</td><td>50149</td><td>30142</td><td></td><td>Add 345 kV terminal at NW Texarkana</td><td>\$48,580,000</td><td>AEP</td><td>04/01/12</td><td></td><td></td><td>01/16/09</td><td></td><td>NW Texarkana 345 kV</td><td>1</td></th<>	20016	50149	30142		Add 345 kV terminal at NW Texarkana	\$48,580,000	AEP	04/01/12			01/16/09		NW Texarkana 345 kV	1
Inst         Inst <th< td=""><td>20016</td><td>50150</td><td></td><td></td><td>Add 345 kV terminal at Turk (Hempstead)</td><td></td><td></td><td>04/01/12</td><td></td><td></td><td>01/16/09</td><td>Turk 345 kV</td><td></td><td>1</td></th<>	20016	50150			Add 345 kV terminal at Turk (Hempstead)			04/01/12			01/16/09	Turk 345 kV		1
SintSi	20016-1	10456	349	transmission service	Add Lufk 345/138 kV transformer	\$7.310.000	AEP	04/01/12			09/18/09	Turk 138 kV Huno Dource Direct 245 kV		1
SintSi	20016	10374	288		Install 345 KV terminal equipment at Valiant Substation	\$3,840,000	AEP	04/01/12		NTC	01/16/09	Pugo Power Plant 345 KV	Vallant 345 KV	1
Sector         Control         Control <th< td=""><td>20027</td><td>10510</td><td>302</td><td></td><td>Republic of AV switch in 1900 and 1000 AAC jumpers at ougat hit. Bebuild 3.40 million of Houseil - Kilanos 60 ki (.40 ACSB with 705 ACSB</td><td>\$100,000</td><td></td><td>05/01/12</td><td></td><td>NIC</td><td>01/27/00</td><td>Howall 60 KV</td><td>Kileen 60 KV</td><td>1</td></th<>	20027	10510	302		Republic of AV switch in 1900 and 1000 AAC jumpers at ougat hit. Bebuild 3.40 million of Houseil - Kilanos 60 ki (.40 ACSB with 705 ACSB	\$100,000		05/01/12		NIC	01/27/00	Howall 60 KV	Kileen 60 KV	1
Sector         Control         Control <th< td=""><td>20000</td><td>10505</td><td>387</td><td></td><td>Rentance wave from all Okmunications</td><td></td><td></td><td></td><td></td><td></td><td>02/13/08</td><td>Riverside Station 138 kV</td><td></td><td>1</td></th<>	20000	10505	387		Rentance wave from all Okmunications						02/13/08	Riverside Station 138 kV		1
Section         Section <t< td=""><td>20000</td><td>10506</td><td>388</td><td></td><td>Replace 2 sets of New Boston switches on terminal to North New Boston.</td><td>\$100,000</td><td>AEP</td><td>05/01/12</td><td>M</td><td></td><td>02/13/08</td><td>North New Boston 69KV</td><td>New Boston 69 kV</td><td>1</td></t<>	20000	10506	388		Replace 2 sets of New Boston switches on terminal to North New Boston.	\$100,000	AEP	05/01/12	M		02/13/08	North New Boston 69KV	New Boston 69 kV	1
Section         Section <t< td=""><td>20000</td><td>10509</td><td>391</td><td>regional reliability</td><td>Reniane 138 kV wavefrans at holh ends, Reset CTs at Lone Star South, Reniane 138 kV switches &amp; reset relays at Dittshum</td><td>\$300,000</td><td>AEP</td><td>06/01/12</td><td>M</td><td></td><td>02/13/08</td><td>Lone Star South 138 kV</td><td>Pittsburg 138 kV</td><td>1</td></t<>	20000	10509	391	regional reliability	Reniane 138 kV wavefrans at holh ends, Reset CTs at Lone Star South, Reniane 138 kV switches & reset relays at Dittshum	\$300,000	AEP	06/01/12	M		02/13/08	Lone Star South 138 kV	Pittsburg 138 kV	1
Name         Object         Object <td>20000</td> <td>10140</td> <td>113</td> <td></td> <td>Convert Red Point-Haughton to 138 kV, 1590 ACSR (Includes Red Point terminal &amp; Haughton station conversion).</td> <td>\$9,480,000</td> <td>AEP</td> <td>06/01/12</td> <td></td> <td></td> <td>02/13/08</td> <td>Haughton 138 kV</td> <td></td> <td>1</td>	20000	10140	113		Convert Red Point-Haughton to 138 kV, 1590 ACSR (Includes Red Point terminal & Haughton station conversion).	\$9,480,000	AEP	06/01/12			02/13/08	Haughton 138 kV		1
Name         Object         Object <td>20000</td> <td>10141</td> <td>113</td> <td>regional reliability</td> <td>Convert Haughton-McDade to 138 kV, 1590 ACSR (Includes McDade station conversion).</td> <td>\$19,482,000</td> <td>AEP</td> <td>06/01/12</td> <td></td> <td></td> <td>02/13/08</td> <td>Modade 138 kV</td> <td></td> <td>1</td>	20000	10141	113	regional reliability	Convert Haughton-McDade to 138 kV, 1590 ACSR (Includes McDade station conversion).	\$19,482,000	AEP	06/01/12			02/13/08	Modade 138 kV		1
NUM         NUM <td>20000</td> <td>10786</td> <td></td> <td></td> <td>Build new Capils-McDade 138 kV, 1590 ACSR line</td> <td></td> <td></td> <td></td> <td>M</td> <td></td> <td>02/13/08</td> <td>Mcdade 138 KV</td> <td></td> <td>1</td>	20000	10786			Build new Capils-McDade 138 kV, 1590 ACSR line				M		02/13/08	Mcdade 138 KV		1
NUM         NUM <td></td> <td>10834</td> <td>636</td> <td></td> <td>Install new 138 kV line from Chireno to Martinsville</td> <td>\$7.617.000</td> <td>DETEC</td> <td>05/01/12</td> <td></td> <td>A 1997 M. A Constate - Principal or of</td> <td></td> <td>Chireno 138 kV</td> <td>Martinsville 138 kV</td> <td>1</td>		10834	636		Install new 138 kV line from Chireno to Martinsville	\$7.617.000	DETEC	05/01/12		A 1997 M. A Constate - Principal or of		Chireno 138 kV	Martinsville 138 kV	1
State         State <th< td=""><td>20036</td><td>10639</td><td>638</td><td>regional reliability</td><td></td><td>\$3,52U,UUU \$60,000</td><td>EDE</td><td></td><td></td><td>NTC-Moulty Liming</td><td></td><td></td><td></td><td>1</td></th<>	20036	10639	638	regional reliability		\$3,52U,UUU \$60,000	EDE			NTC-Moulty Liming				1
	20030				prepare purplets on organized musculal bidanialm Juncoun milli con August for falles force mive. Install (3) 7.2 Marc consistent for a bida of 21.6 Marc at Tableauch Wast 50 M.							Tableaush West 60 kV	Sob 415 - Diackilawk Junctof 69 KV	
Store         Store <th< td=""><td>20020</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Claudiant 345 KM</td><td>1</td></th<>	20020												Claudiant 345 KM	1
SUM         SUM <td>20040</td> <td>10927</td> <td></td> <td></td> <td>Inissai terimitai evopimenti ai cie/teafio Substationi Beanchutor Ina to 1500 A CER A = 347 8 = 403 \$255K/mile @ 2 8 mil</td> <td></td> <td></td> <td>12/31/12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td>	20040	10927			Inissai terimitai evopimenti ai cie/teafio Substationi Beanchutor Ina to 1500 A CER A = 347 8 = 403 \$255K/mile @ 2 8 mil			12/31/12						1
No.         No. <td>20021</td> <td>10365</td> <td>200</td> <td>regional reliability</td> <td>Reconcision in the table record, <math>A = 347</math>, <math>B = 403</math>, <math>2255 (min) \in [0, 0, 1]</math></td> <td>\$1,212,000</td> <td></td> <td>05/01/12</td> <td></td> <td></td> <td>01/16/09</td> <td></td> <td></td> <td>1</td>	20021	10365	200	regional reliability	Reconcision in the table record, $A = 347$ , $B = 403$ , $2255 (min) \in [0, 0, 1]$	\$1,212,000		05/01/12			01/16/09			1
Sec.         Fig.         Sec.         Sec. <t< td=""><td>a-444 I</td><td>10955</td><td>718</td><td></td><td>Adding 115 kV line from Sub F - Libory, City of Grand Island Owned Transmission Facility that is NOT under SPP OATT</td><td>\$3,937,500</td><td>GRIS</td><td></td><td></td><td></td><td>01/10/09</td><td></td><td>ST.LIB 7 115 kV</td><td>1</td></t<>	a-444 I	10955	718		Adding 115 kV line from Sub F - Libory, City of Grand Island Owned Transmission Facility that is NOT under SPP OATT	\$3,937,500	GRIS				01/10/09		ST.LIB 7 115 kV	1
Store         Store <th< td=""><td></td><td>10956</td><td>719</td><td></td><td>Upgrade line to 179 MVA. City of Grand Island Owned Transmission Facility that is NOT under SPP OATT.</td><td>\$200,000</td><td>GRIS</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></th<>		10956	719		Upgrade line to 179 MVA. City of Grand Island Owned Transmission Facility that is NOT under SPP OATT.	\$200,000	GRIS							1
ONC         ONC <td>20018</td> <td>10405</td> <td>313</td> <td></td> <td>Install new line from Vallant 345 kV to Hugo Power Plant with 19 miles of bundled 795 ACSR conductor</td> <td>\$18,000,000</td> <td>ITCGP</td> <td>04/01/12</td> <td></td> <td></td> <td>01/16/09</td> <td>Hugo Power Plant 345</td> <td></td> <td>1</td>	20018	10405	313		Install new line from Vallant 345 kV to Hugo Power Plant with 19 miles of bundled 795 ACSR conductor	\$18,000,000	ITCGP	04/01/12			01/16/09	Hugo Power Plant 345		1
Sector         Sector<	20018	10406	314		Install new 345/138 kV transformer	\$12,000,000	ITCGP	04/01/12			01/16/09	Hugo Power Plant 345 kV		1
Sector         Sector<	20042	10934	702	Balanced Portfolio	West Gardner 345kV bus cut-in to Swissvale-Stillweil 345 kV line	\$2,000,000	KCPL	06/01/12			06/19/09	West Gardner 345 kV		
Store         Other         Open and program         Open			377	zonal - sponsored	New Middle Creek sub and Paola-Middle Creek 161kV line		KCPL	05/01/12				Paola 161 kV	Middle Creek 161 kV	1
Store         Other         Open and program         Open		10491			New North Louisburg-Middle Creek 161kV line	\$12,179,000	KCPL	05/01/12	M			North Louisburg 161 KV		1
Image: Name         Image: No. 10         Image: No.		10540					KCPL		M			Cedar Niles		1
1987         1987 <th< td=""><td>20009</td><td>10543</td><td></td><td></td><td>Upgrade wavetrap at Gladstone from 800 A to 1200 A</td><td>\$13,000</td><td>KCPL</td><td>05/01/12</td><td></td><td></td><td>02/13/08</td><td>Avondale 161 kV</td><td>Gladstone 161 kV</td><td>1</td></th<>	20009	10543			Upgrade wavetrap at Gladstone from 800 A to 1200 A	\$13,000	KCPL	05/01/12			02/13/08	Avondale 161 kV	Gladstone 161 kV	1
1956         1957         1958         1959 <th< td=""><td></td><td></td><td></td><td>regional reliability - non OATT</td><td>New Substation and transformer 115/69 KV 44 MVA</td><td>\$1,000,000</td><td></td><td></td><td></td><td></td><td></td><td>LE_ERF 115 KV</td><td></td><td>1</td></th<>				regional reliability - non OATT	New Substation and transformer 115/69 KV 44 MVA	\$1,000,000						LE_ERF 115 KV		1
Desc.         Fibre         Based in Mark         Instance Mark State of parameters ward         End State St				regional reliability - non OATT	New Line 59 KV	\$1,000,000						LE_ERF 69 KV		1
State         State         Instant More capable target and account 15 V.         1.00000         14870         0.00112         NTC         NATE					New Line 69 KV							LE_ERF 69 KV		1
State         State         Instant More capable target and account 15 V.         1.00000         14870         0.00112         NTC         NATE	20046	50104	30008		Initial new 346/230 kV transformer at Worr Initial 20 More reactive have at Dialnulle 115 kV	\$1,600,000		05/01/12	M		02/13/09	Disinglie 115 kV	W0F 230	- 1
Store         Store         Personal         Store         Temporal relation         Personal         Net/C	20007		30236			\$1,000,000	NEC			NTC	021000			
State         State         Tendent state					Add on 15 Mar can at Dateshum	\$607,500								
Second         Second         Performation         Second         Heffor         1100/12         1100/12         NTC         Average Hard         Constrained Second           1056         2000         200		50208				\$729,000	NPPD							+
Sector         Strip         Andre Half         Andre Half         Strip         Andre Half         Strip         Strip<		50209			Expand existing 9 Mvar cap to 18 Mvar cap at Ainsworth	\$50,000		11/01/12				Ainsworth 115 kV		-
Exp         Stolic         Stolic <td></td> <td>50206</td> <td>30199</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Onelli 69 kV</td> <td></td> <td>-</td>		50206	30199									Onelli 69 kV		-
11054         177         Dots - sponse         The CENNTY - Size CENNTY - Size CENNT A Sub IN 15 W FeN 15 MA FEN         15 453.00         MPD         1101/12         M         Conv 15 W         Conv 15 W         Conv 15 W         Conv 15 W           11056         178         2001 - sponse         1000 - 100		50210	30203	regional reliability	Add one 18 Mvar cap at Onell 115	\$729,000				NTC		Onelli 115 kV		_
1966         712         2004-spreade         1000-bit Mathematic Mathant Mathematic Mathematint Mathematic Mathant Mathematic		10051	747		Tap CENCITY7 - Silver Creek 115 kV at CLARKS7. Build new 115 kV line from CLARKS7 - CEN.C.N7. Radial 115 kV line for	FE COS 000	1000					00000 445 144	000100102445104	
1056         172         2001-Scotzer         Bitti Rev in the fund integration and stratume int		10904	/1/	zonal - sponsored	TransCanada Keystone XL project.	35,625,000	NPPD	11/01/12	M			Clarks 115 kV	GEN.G.N/ 115 KV	1
1086         749         region relationly         Under conclude and terminal segment to 100 Geg Raferg by 2012. 198 MA normal continuous raferg 198 MA A-Para         100.000         NPED         660112         ORICI         Log Chy 118 W         Month Date 118 W           11006         618         regional reliability         Enclosed reliability         Enclosed reliability         State 2017         State 2017         State 2017         Month Date 118 W         State 2017         Month Date 118 W         Month Date 118 W         Month Date 118 W         State 2017         State 2017         Month Date 118 W         State 2018         Month Date 118 W         State 2017         State 2017         Month Date 118 W         State 2018         State 2018         Month Date 118 W         State 2018         Month Date 118 W         State 2018         Month Date 118 W         State 2018         Month Date 2018         State 2018         Month Date 2018 W         State 2018<		10969	732		Build new line from Onell to new STUARTS7. Radial 115 kV line for TransCanada Keystone XL project.	\$16,031,250		11/01/12						1
Links         Ho         Industrial         emergency rates, emergency rates, internal equipment to 100 big Aging by 2012. 137 MA normal continuous rates, 137 MAA Ahar Subcol 2016         NPPD         Op/Init         NPPD         Op/Init         NPPD         Op/Init         NPD         Op/Init         NP		10975	738	zonal - sponsored	Build new line from Petersburg to new ERICSON7. Radial 115 kV line for TransCanada Keystone XL project.	\$19,687,500	NPPD	11/01/12	M			Petersburg 115 kV	Ericson 115 kV	1
Image of the state         Image o		10085	749	regional reliability	Uprate conductor and terminal equipment to 100 Deg Rating by 2012. 155 MVA normal continuous rating. 155 MVA 4-hour	\$2,000,000	NEOD	05/01/12	05/01/12	NTC		Maloney 115 KV	North Diate 115 kV	1
Index         Undex         Undex <th< td=""><td></td><td>10300</td><td>142</td><td>regional renability</td><td>emergency rating.</td><td>42,000,000</td><td>NEED</td><td>00/01/12</td><td>00/01/12</td><td>NIG</td><td></td><td>indiancy in a ku</td><td>Horal Place 110 kg</td><td></td></th<>		10300	142	regional renability	emergency rating.	42,000,000	NEED	00/01/12	00/01/12	NIG		indiancy in a ku	Horal Place 110 kg	
Line         Line <th< td=""><td></td><td>11080</td><td>818</td><td>regional reliability</td><td>Uprate conductor and terminal equipment to 100 Deg Rating by 2012. 137 MVA normal continuous rating. 137 MVA 4-hour</td><td>\$1,000,000</td><td>NEOD</td><td>05/01/12</td><td>06/01/12</td><td>NTC</td><td></td><td>Loun City 115 kV</td><td>North Loup 115 kV</td><td>1</td></th<>		11080	818	regional reliability	Uprate conductor and terminal equipment to 100 Deg Rating by 2012. 137 MVA normal continuous rating. 137 MVA 4-hour	\$1,000,000	NEOD	05/01/12	06/01/12	NTC		Loun City 115 kV	North Loup 115 kV	1
Initial         End         Implicit Heading         Statu City Juin					emergency rating.									
Integral         Statu Coly Explore         All bits		11151	629	regional reliability			NPPD	05/01/12	м	NTC		Twin Church 115 kV	South Sloux City 115 kV	1
11152         6.99         regional reliability         Built one 5.5 miles coulde cloud line from Twin Chr- new South Sloux City sub. Includes retuil of Twin Chruch sub and new South         NPPD         660112         M         NTC         Tain Chruch 115 kV         South Sloux City sub.           20029         10749         583         regional reliability         Intail There top for Asset is usbalant.         54,972,000         OGE         6331112         M         0112756         WB 151 kV         Added 161 kV           20058         10264         10259         639         Balance Porticia         Statis View from South So														_
111         112 <td></td> <td>11205</td> <td>629</td> <td>zonal - sponsored</td> <td>Rate 8 was increased from 88 MVA to 99 MVA by replacing substation terminal equipment.</td> <td>\$33,000,000</td> <td>NPPD</td> <td>12/31/08</td> <td>M</td> <td></td> <td></td> <td>Twin Church 115 kV</td> <td>Belden 115 KV</td> <td>1</td>		11205	629	zonal - sponsored	Rate 8 was increased from 88 MVA to 99 MVA by replacing substation terminal equipment.	\$33,000,000	NPPD	12/31/08	M			Twin Church 115 kV	Belden 115 KV	1
2020         074.0         643         regions intrology         20000 mode         0.012 / 2000         0.02 / 2000         0.03 / 112         M         0.112 / 2000         Addlet 16 / 14 / 2000           20005         10583         553         regions reliability         New 345 / 10 / 16 / 10 / 10 / 10 / 10 / 10 / 10		11152	629	regional reliability	During new stormines double circuit line from Twin CH- new South Sloux City sub. Includes reduite of Twin Church sub and new South		NPPD	05/01/12	м	NTC		Twin Church 115 kV	South Sloux City 115 kV	2
2005         1066         533         regions relationly         New 345 kV line from booker to Cavandmarkae stateme of the interface with the Vector Entregion of Safe kV line from Safe kV.         Rose Hill Safe kV.         Rose Hill Safe kV.           20011         10529         669         Bannee Portfolio         Buils new 345 kV.         Rose Hill Safe kV.         Safe kV. <td< td=""><td>20020</td><td></td><td>1</td><td></td><td></td><td>\$4.070.005</td><td>005</td><td></td><td></td><td></td><td>01/27/00</td><td></td><td></td><td>1</td></td<>	20020		1			\$4.070.005	005				01/27/00			1
2005         10665         523         regional relationstry         New 345 xV line from solver to Cavandmarkae stateme of the interface with the Vector Energy inte signment to active actors         54:00.000         OGE         66:01:12         M         69:18:06         Boome 245 kV         Roce Hild 34 kV           20011         10592         696         Balance Portfold         Buils new 345 xV         Celevaid 345 xV         Sumption 245 xV         Celevaid 345 xV         Celevaid 345 xV         Sumption 245 xV         Celevaid 345 xV         Sumption 245 xV         Sumption 245 xV         Sumption 245 xV         Sumption 245 xV         Celevaid 345 xV         Sumption 245 xV	20029	10/49			Install new tap for Avd/001 SUDSIDUT.	\$4,972,000	OGE	03/31/12			01/27/09	Aloca Tao 151 kV		1
2001         1052         699         Balance Portfolo         Buils new 345 KV inter form Sequence in Lastal terminal equipment at Source         547,200,000         OGE         123112         M         6619909         Source 355 KV         Cleveral 345 KV           20017         50169         30161         transmission service         Add 345/15 KV full from Sumplice         500,000,000         OGE         040112         M         011609         Sumsles 35 KV         Sumplice           20017         50169         30161         transmission service         Add 345/15 KV full from Sumplice         Summission service         Summission service         Summission	20025	10749				\$45,000,000		05/01/12	M		09/18/09	Sponer 345 kV	Rose HII 345 kV	1
20017         50169         30161         transmission service         Add 345 kV line from Sumpside to WFEC Interception of 345 kV breaker, switches, and reavy at Sumpside.         \$200,000,000         OGE         640112         M         011609         Hugo 345 kV         Sumpside 345 kV           20017         50171         30163         transmission service         Add 3rd 324138 kV Auto Transformer         Sumpside 345 kV         Sumpside 345 kV         Sumpside 345 kV         Sumpside 345 kV           10017         551         readonar relability         Instal 2 minute as 115 kV / months equipment at 0ak Park and instal terminal excurptert at 0ak Park.         \$30,0000         OGE         660112         560112         NTC         Jourson 161 kV         Massard 161 kV           20058         55101         readonar relability         Content 5.6 miles of 94 kV to 11 kV.         5325 0000         OGE         660112         110102         TTC         Jourson 161 kV         Massard 161 kV / months equipment at 0ak VV         Vot 345 kV           20058         55101         20104         regionar relability         Add XV arC Cap bank AV and Transformer         S20,000         SEPC         660112         M         G91605         North Charanon 116 kV         Vot 345 kV           20068         50110         30104         regionar relability         Add XV arC Cap bank AV and	20041	10929	699	Balanced Portfolio		\$47,200.000	OGE	12/31/12						1
2001         SUID         SUID <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>12001112</td><td></td><td></td><td></td><td>obuild one int</td><td></td><td>· ·</td></th<>								12001112				obuild one int		· ·
2007         50171         20163         transmission service         Add fm 34/138 V Auto Transformer         Summation and transformer         Still         transmission service         Add fm 34/138 V Auto Transformer         Summation and transformer			1	transmission service	Sunnyside.	\$200,000,000	OGE	1	м		01/16/09	Hugo 345 KV	· ·	1
1083         551         redictor relability         Instal 2 rails of 15 LV from Johnson to Oxit Park and Instal Emilal equivament at Oax Park.         53.0000         Oxit PB 050/112         NTC         Oxak Park 161 LV         Administry           11002         759         zoolal - sponsored         Relabole leminate equipment so that the overall facility rating is 322 MVA         \$565,000         OPEP         561/12         660/112         NTC         Johnson 161 LV         Mesard 161 KV           20056         50110         30104         regionar relability         Add 34 MVA         \$565,000         OPEP         561/12         G60/112         NTC         Johnson 161 LV         Mesard 161 KV           20056         50110         30104         regionar relability         Add 34 MVA         \$550,000         SEPC         560/112         MM         661/1909         G61/1609         Mort Mesard 161 KV           20056         533         regionar relability         More 35 KV Internation 100 KV INDE         \$51,45,000         SEPC         560/112         M         661/1909         G61/1909         G61/1909         G61/1909         G61/1904         CE Johnson 161 KV         Mort Johnson 161 KV<	20017	50171	30163	transmission service	Add 2nd 345/138 kV Auto Transformer	\$10,000,000	OGE	04/01/12	M		01/16/09	Sunnyside 345 kV		2
Introl         S51         redicat relability         Convert 5.6 miles of 9 kV to 161 kV         Massard 161 kV           11002         759         zoolal-sponsored         Reglobe emiles of 9 kV to 161 kV         S55.00.00         OGP 0         110/02         TVC         John 500 relability         SUB 12 kV         SUB 12 kV <td></td> <td></td> <td>551</td> <td></td> <td>Install 2 miles of 161 kV from Johnson to Oak Park and Install terminal equipment at Oak Park.</td> <td>\$3,200,000</td> <td>OGE</td> <td>05/01/12</td> <td></td> <td></td> <td></td> <td>Oak Park 161 KV</td> <td></td> <td>2</td>			551		Install 2 miles of 161 kV from Johnson to Oak Park and Install terminal equipment at Oak Park.	\$3,200,000	OGE	05/01/12				Oak Park 161 KV		2
11002         759         zonal-sponsored         Replace leminal equipment so that the overfall collin range is 32 MA.         5466.000         OPPD         11/10/12         BUB 1221 161 kV         5125 161 kV           20056         50110         30104         regionar relaboilty         Aod 34 May Cap bank 3 Morth Charron         \$52.000,000         SEPC         6601/12         061406         North Charron 118 kV           20045         50310         30104         regionar relaboilty         More additionar 0118 VL         061909         Section 2000         SEPC         6601/12         M         061909         Section 2000         SEC         SECtion 2000		10701	551		Convert 5.6 miles of 69 kV to 161 kV.	\$5,500,000	OGE		06/01/12	NTC				1
2006         SUI10         20104         FegOria Fredority         Add at Nutr Cap Cark at North Chharton         42.00.00         SEPC         06.0112         M         Coll Note         Volt         ASS Multication           20045         11033         705         Basimed Particle         Buils new Asynche Darity on Early and a Nutr Cap Cark at North Chharton         819.000.00         SEPC         06.0112         M         Coll North         SEC Coll SeC V         VOIT 345 NV           11102         833         residers relaxing         North Cap Cark at North Chharton         SEC Coll SeC V         VOIT 345 NV         EColes 115 NV         ECol		11002	759		Replace terminal equipment so that the overall facility rating is 352 MVA.	\$565,000	OPPD	11/10/12	11/10/12				S1255 161 KV	1
11102         633         redomar relability         Now load from 69 to 115 V/ Load         51624500         SPB         11/17/12         650/1/4         ECT Colds 69 RV         E Clow/Link           11103         635         redomar relability         Resonance/Link         53/11         SPB         11/17/12         650/1/4         FE/Colds 115 V/         FE/Colds 115 V/           11103         635         regionar relability         Add second 230/138/V transforme & Borton County by monthain when relined.         51/12/0.000         SPB         03/21/12         650/1/10         NTC         Caprock FE/C-vealmoor 138 V/         Borten County hierotrange 210 V/           11104         791         regionar reliability         New 15 mile Statisme County interchange + hart insultida Statisme - Borton 115 V/         Borten County hierotrange 210 V/         Statisme 200 V/         Statisme 200 V/         Caprock FE/C-vealmoor 128 V/         Borten County hierotrange 230 V/           111041         791         regionar reliability         New 15 mile Statisme County interchange 118 V/         Statisme 200 V/			30104											
11103         633         redonar relability         Resonance (5.35 m) FE-Clouk ID LSY V/CL 1 mth 327 AGSR.         52.27 031         SPB         12/17/12         650/14         FE-Clouk ID SV         FE-Holan C-cluy (FE-Holan C-clu) (FE-Holan C-cluy (FE-Holan C-clu) (FE-Holan C-clu) (FE-Holan C-clu (FE-Holan C-clu) (FE-Holan C-clu (FE-Holan C-clu) (FE-Holan C-clu (FE-Holan C-clu) (FE-Holan C-clu (FE-Holan (FE-Holan C-clu (FE-Holan (F	20045	10939				\$54,000,000					06/19/09			1
11056         797         regionar relability         Add second 320138/V transformer & Border County Interchange 10 throm Midland when relifed.         \$1128,000         SPS         03/21/2         06/01/10         NTC         Caprock REC-Vealmoor 138 kV         Border County Interchange 118 kV           11045         791         regionar reliability         New 19 mile Satisfer County Interchange 14 kV         \$18,435         SPS         127/612         05/01/10         NTC         Lambdo interchange 118 kV         Border County Interchange 200 kV           11041         791         regionar reliability         New 19 mile Satisfer County Interchange 200 kV         S11280.000         SPS         127/612         05/01/10         NTC         Lambdo interchange 118 kV         Border County Interchange 200 kV           11042         791         regionar reliability         New 19 mile Satisfer County Interchange 200 kV         S11280.000         SPS         127/612         05/01/10         NTC         Lambdo interchange 118 kV         Newhord 115 kV           11043         791         regionar reliability         Convet existing 82 kV         65/01/00         NTC         Creates County Interchange 200 kV         Netherd 115 kV           11053         791         regionar reliability         Convet existing 82 kV into 64/04 kV/V         65/062/062         SPS         012/112         05/0						\$16,245,000								1
11045         791         regionar reliability         New 15 mile Lampton interchange - Nation Lampton - Nation Lampton Lampton interchange - Nation Lampton - Nation Na			835			\$2,257,031								1
11011         791         regional reliability         New 19 mile Statiser County Infectange - Neurant 230 kV Inc.         516 331360         598         127/612         650/110         NTC         Newnant 230 kV         Subtend 115 kV           11042         791         regional reliability         New 19 mile Statiser County Infectange - Neurant 15 kV Inc.         510 155.000         SPB         127/612         650/110         NTC         Krees - Neurant 15 kV         Neurant 15 kV           11043         791         regional reliability         New 24 mile Castro County Interchange - Neurant 115 kV         Neurant 15 kV				regional reliability	Add second 230/138KV transformer at Borden County by moving old from Midland when refired.	\$11,250,000						Caprock REC-Vealmoor 138 kV	Borden County Interchange 230 kV	2
11042         791         regional reliability         New 19 mile Krees - Newhard 115 kV / Inc.         510 352000         SPB         12/16/12         650/10         NTC         Krees interchange 115 kV         Newhard 115 kV           11043         791         regional reliability         New 24 mile Krees - Newhard 115 kV / Inc.         51350000 SPB         12/16/12         650/10         NTC         Cath to the comparison of the comparison					New is mile Lampton interchange - Hart industrial substation 115 kV line.	\$8,438								1
11013         1791         regionar relability         New 24 mile Castor County Interchange - Mount 115 W Inse.         53.3500.000         SPB         121/672         2650/10         NTC         Castor County Interchange 115 KV         Newhard 115 KV           11089         854         regionar relability         Convert existing 82 Unit Hodos - Moland 230 KV In to operate at 345 KV.         54.725.000         SPB         01/21/12         050/10         NTC         Hobos 345 KV         Moland 230 KV Instrume           11021         774         regionar relability         Convert existing 82 Unit Hobos 45 KV.         54.725.000         SPB         01/21/12         050/10         NTC         Heatings 115 KV         Matangs 115 KV           11022         774         regionar relability         Convert existing 82 Unit Hobos 45 KV.         55.62,303         SPB         09/11/2         NTC         Heatings 115 KV         Heatings 115 KV           11022         774         regionar relability         New 3 mile Hobos 45 KV         115 KV         52.02,000         SPB         09/01/2         06/01/0         NTC         Heatings 115 KV         Busings 115 KV           11025         774         regionar relability         Resonationare 51 KV         Sustem 115 KV         Busings 115 KV         Busings 115 KV         Busings 115 KV         Busings 115 KV <td></td> <td></td> <td></td> <td>regional reliability</td> <td>New 19 mile Swisner County interconange - Newhart 230 KV line.</td> <td>\$16,031,250</td> <td></td> <td></td> <td></td> <td></td> <td>l</td> <td></td> <td></td> <td>1</td>				regional reliability	New 19 mile Swisner County interconange - Newhart 230 KV line.	\$16,031,250					l			1
1106         824         regionar relability         Convert existing 95.22 mile Hobbs - Micro Aperale at 345 kV.         54.728.000         SP6         01/21/12         06/01/10         NTC         Hobbs 345 kV         Mitlion 345 kV           11021         774         regionar relability         Convert existing 50 brom 6%brom 50 kbrom 6%brom					New 10 mile Nicks - Newmark 115 KV lifts.	\$10,125,000								1
11021         774         regionar relability         Convert Hastings 5/U from 68V to 115 kV         Hastings 115 kV         Bastings 115 kV         Basting 115 kV         Basting 115 kV         Bastin				regional reliability	New 24 mile Casual County matchange - Newhart 115 KV line.	\$13,500,000					l	Gasuo County Interchange 115 KV		1
11022         774         regionar relability         New 5 mile Haalings - Supin 15 KV me         Sup 5 usin 15 kV         Bush Sup 15 kV <t< td=""><td></td><td>11009</td><td></td><td>regional reliability</td><td></td><td>94,725,000</td><td></td><td></td><td></td><td></td><td>l</td><td></td><td></td><td></td></t<>		11009		regional reliability		94,725,000					l			
11038         769         regional reliability         Resonable Interchange 115 kV with 397 kcml conductor.         \$11,8000         SPS         0526/12         0501/12         NTC         Resent Interchange 115 kV         Braneer Tap           11055         764         Baraneer Portfolio         Add second 345/2301132 kV Tuco Interchange 515/560 MVA transformer #1 fmo/Tarva store         \$11,260,000         SPS         0502/112         NTC/Modity Timing         D6/19/09         Tuco Interchange 335 kV         Tuco Interchange 305 kV         Tho-Draw 115 kV         SPS         05/21/12         D6/01/12         NTC         Fin-Draw 230 kV         Fin-Draw 115 kV         SPS         D5/21/2         D6/01/12         NTC         Fin-Draw 230 kV         Fin-Draw 115 kV         SPS         D5/21/2         D6/01/12         NTC         Fin-Draw 230 kV         Fin-Draw 115 kV         SPS         D5/21/2         D6/21/2         NTC         Fin-Draw 230 kV         Fin-Draw 115 kV         SPS         D5/21/2         D6/21/2         NTC         Fin-Draw 230 kV         Fin-Draw 115 kV         SPS         D5/21/2         D6/21/2         NTC         Fin-Draw 230 kV         Fin-Draw 230 kV         Fin-Draw 230 kV         Fin-Draw 230 kV         Fin														+ -
11105 / V4 Bakinger Perdul Add second 249/20173. XV 1000 metrotrates 21500 VVX Ballisome. 3112/2020 5P5 0 0001/12 N 11-040000 metrotrates 245 VV 1000 metrotrates 245 VV 10000		11022			Reanchurch 7 mile Roswell Historhanne - Brasher Tan 115 K/ with 307 kowli consistent									1
11052 795 regional reliability New 230/115kV transformer at Frio-Draw substation. \$11,250,000 SPS 05/21/12 06/01/11 NTC Frio-Draw 230kV Frio-Draw 115 kV		11030	709			\$114,000		03/20/12			06/10/02			2
100 20 100 100 100 100 100 100 100 100 1		11052	795			\$11,250,000		05/21/12			00/15/05			1
		11053	795	regional reliability	Build new 16 mile Frio-Draw - Oasis 230kV line.	\$13,500,000	SPS	05/21/12	06/01/11	NTC		Frio-Draw 230kV	Oasis Interchange 230 kV	1

				appendix di Directore Appendix A projecte santary 26, 2010									
	11054	795	regional reliability	Build new 26 mile Frio-Draw - Roosevelt County 230kV line.	\$21,937,500	SPS	11/17/12	06/01/11	NTC		Frio-Draw 230kV	Roosevelt County Interchange 230 kV	117
	11176	887	regional reliability	Build new 9 mile Canyon West - Spring Draw 115 kV line.	\$7,762,500	SPS	12/16/12	6/1/2010	NTC		Canyon West 115 kV	Spring Draw 115 kV	1
	11177	888	regional reliability	Build new 20 mile Randail Co - Amarilio South 230 kV line.	\$27,450,000	SPS	12/16/12	6/1/2010	NTC		Randali Co 230 kV	Amarillo South 230 kV	1
	10835	102	regional reliability - non OATT	Upgrade Nixa #2 transformer to 70 MVA	\$1,575,000	SWPA		06/01/18			Nixa 161 kV	Nbta 69 kV	2
	50294	30257	regional reliability - non OATT	10 Mvar cap at Gregory WAPA	\$405,000	WAPA	06/01/12				Gregory 115 kV		
	50295	30258	regional reliability - non OATT		\$874,800	WAPA	05/01/12				Martin 115 kV		
10000	50297 50047	30259 30041	regional reliability - non OATT	30 Mvar cap bank at PHILLIPS WAPA	\$1,215,000	WAPA	05/01/12				Philips 115 kV		
19985 20003	50047	30041 30093	regional reliability regional reliability	Install 12 Mvar capacitor at Comanche 138 kV bus. Install 12 Mvar capacitor at Latta Junction 138 kV.	\$350,000	WFEC WFEC	05/01/12 05/01/12	M		02/02/07	Comanche 138 kV Latta Junction 138 kV		_ <b>_</b> /
	50099		transmission service	Install 345 kV breaker at Hugo	\$324,000		06/01/12	M		01/16/00	Hugo 345 kV	Sunnyside 345 kV	<u> </u>
20018	10500	30165	regional reliability	Convert 3 miles of 69 kV to 138 kV from Indiahoma to Grandfield.	52,000,000	WFEC	04/01/12 05/01/12 05/01/12	M		02/13/08	Crandfield 139 kV	Indiahoma 138 kV	++-
20003	10522	402	regional reliability	Tap Cache to Paradise 138 kV and Install 13.7 miles of 138 kV from Cache to Indiahoma.	\$7,306,000	WFEC	05/01/12	M		02/13/08	Grandfield 138 kV Indiahoma 138 kV Grandfield 138 kV	Cache SW 138 kV	1
20003		402	regional reliability	Install new 138/69 kV transformer at Grandfield	\$5,000,000	WFEC	05/01/12	M		02/13/08	Grandfield 138 kV	Grandfield 69 kV	1
20003 20003	10524 10519	399	regional reliability	Upgrade line from 1/0 to 336.4, 4.85 miles	\$1,347,000	WFEC WFEC	06/01/12	M		02/13/08	Lindsav 69 kV	Walvile 69 kV	1
20003	10520	400	regional reliability	Upgrade line from 1/0 to 336.4, 4.85 miles WFEC will upgrade 800 A CTs, new CT limit will be 1200 A at Pharaoh.	\$225,000	WFEC	06/01/12	M		02/13/08	Pharoah 138 kV WFEC Russell 138 kV	Weleetka 138 kV	1
20003	10521 10878	401 672	regional reliability	Replace CT at WFEC Russell	\$50,000 \$1,950,000	WFEC WFEC	06/01/12	M		02/13/08	WFEC Russell 138 kV	AEP Altus Jct Tap 138 kV El Reno SW 69 kV	1
			regional reliability	Reconductor 6.5 miles of 1/0 conductor with 336.4 ACSR.				06/01/12	NTC		El Reno 69 kV	El Reno SW 69 kV	1
20006	50102 50229	30096 30225	Zonal Reliability	Install 20 Mvar capacitor bank at Eudora 115 kV.	\$580,000	WR	05/01/12	M		02/13/08	Eudora 115 kV		
20059			transmission service zonal - sponsored	Add 15 Mvar Cap bank at Allen	\$607,500	WR	05/01/12			09/18/09	Allen 69 kV		_ <b>_</b>
	50295	30256	Zonai - sponsored	Instal 2nd block of 14.4 Mvar	\$1,120,000	WR	05/01/12	м			Clearwater 138 kV		_ <b>_</b> /
20033	10602	463	regional reliability	The East Manhattan-McDowell 115 kV is built as a 230 kV line but is operated at 115 kV. Substation work will have to be performed in order to convert this line to 230 kV operation.	\$4,100,000	WR	06/01/12	M		01/27/09	East Manhattan 230kV	McDowell 230kV	1
	10995	754	zonal - sponsored	Build a new 138kV line from Clearwater and a new 138kV line from Evans to serve the new Goddard substation	EE 606 000	WR	05/01/12	м			Clearwater 138 kV	Goddard 138 kV	<u> </u>
	10995	754	zonal - sponsored	Build a new 138kV line from Clearwater and a new 138kV line from Evans to serve the new Goddard substation	\$5,625,000	WR	05/01/12	M				Goddard 138 kV	1
20059	50228	30224	transmission service	Rebuild approximately 6 miles of line with 954-KCM ACSR to achieve a minimum 600 amp emergency rating	\$2,560,500	WR	05/01/12	m		00/19/00	Evans Energy Center South 138 KV Allen 69 KV	Lehigh Tap 69 KV	1
20059	10221	172	regional reliability	Convert TEC-Midland from 161 kV to 115 kV	\$2,100,000	WR	06/01/12	м		02/13/08	Tecumseh Energy Center 115 kV	Midland 115 kV	1
19964	10488	375	transmission service	Install 3rd Rose Hill 345/138 kV TRANSFORMER.	\$2,100,000	WR	05/01/12	M		06/27/07	Tecumseh Energy Center 115 kV Rose Hill 345 kV	Rose Hill 138 kV	3
20063	10400	664	regional reliability	Tear down and rebuild 1.8 mile Gill Energy Center West - Waco 138 kV with bundled 1192.5 ACSR conductor.	\$1,000,000	WR	05/01/12	06/01/13		11/02/09	Gill Energy Center West 138 kV	Waco 138 kV	1
						Year 2013							
20027	10575	443	vilideles colors	Tan the South Sodinoide East Excellentia 151 kV line and hulld 1.5 miles of 151 kV to new Orleaning chiles	\$2,000,000		06/04/41	м		01/27/00	Oshourne 161 kV	Osbourne Tap 161 kV	1
20027		443	regional reliability	Tap the South Springdale-East Fayetteville 161 kV line and build 1.5 miles of 161 kV to new Osbourne station. Rebuild the 26.2 mi Carnegie - Hobart Jot. 138 kV line from 397 ACSR to 1272 ACSR. Replace 3 switches, wave traps and jumpers.		AEP	06/01/13			01/2//09	Osbourne 161 kV		
	10695	546	regional reliability	Reset CTs and relaxs.	\$26,150,000	AEP	1	06/01/13	NTC	1	Hobart Junction 138 kV	Carnegie 138 kV	1
				Reconductor the 14.37 mile Southwest Station - Carnegie 138 kV line from 795 ACSR to 1272 ACSR. Replace wave traps and		1				1			
	10696 & 10697	546	regional reliability	lumoers.	\$11,030,000	AEP	1	06/01/13	NTC	1	Carnegle 138 kV	Southwest Station 138 kV	1
20054	11015	770	regional reliability		\$2,500,000	AEP	05/01/13	1		11/02/09	Ashdown 138 kV	Craig Junction 138 kV	1
20057	10587	539	transmission service	Rebuild 2.45 miles of 795 ACSR with 1590 ACSR and reset relays. Brookline: Replace 1,200 amp switches with 2,000 amp units and replace metering CTs. Junction: Replace 1,200 amp switches with	\$120,000		06/01/13	06/01/19		11/02/09 09/18/09	Brookline 161 kV	Junction 161 kV	
20057 20034	10847	539 646	regional reliability	Replace Clinton 161/69 kV transformer #1 with new 100/125 MVA to match transformer #2.	\$2,000,000	CUS GMO	06/01/13 06/01/13	M		01/27/09	Clinton 69 kV	Clinton 161 kV	1
	10430	333	zonal - sponsored	161kV Tap of Halimark to Sibley	\$302,795	GMO	06/01/13	M			Ritchfield 161	Sibley 161	1
	10432	335	zonal - sponsored	161kV Tap of Halimark to Sibley	\$0	GMO	06/01/13	M			Halimark 161	Ritchfield 161	1
	10541 10544	414	zonal - sponsored	New Quarry-Clare 161 kV Line	\$0 \$1,385,000 \$1,632,300	KCPL KCPL	05/01/13	M			Quarry 161 kV	Clare 161 kV	1
	10544	418	zonal - sponsored	New Waldron sub cut-In	\$1,632,300	KCPL	06/01/13	M			Waldron 161 kV	Maywood 161 kV	1
	10545 10952	418 715	zonal - sponsored	New Waldron sub cut-In	5000 000	KCPL KCPL	06/01/13		170		Waldron 161 kV	Weatherby 161 kV	1
	10952		regional reliability	Reconductor GMO portion of Glenare - Liberty 69 kV for 70/79 MVA rating.	\$200,000	KGPL		06/01/13	NIC		Glenare 69 kV	Liberty 69 kV	
	10948	711	zonal - sponsored	Add NW68th Holdrege 345/115kV Transformer #2. Driven by NERC Category C (TPL-003) - prior outage of one 345/115kV	\$11,250,000	LES	05/31/13	M			NW68 & HOLDRIDGE 115 KV	Nw68 & Holdridge 345 Kv	1
20046	10940	707	Balanced Portfolio	transformer, followed by an outage of a second 345/115KV transformer. Build new 345 kV line from Knoll to Interception point of Spearville to Knoll line.	\$42,000,000	MIDW	05/01/13	м		06/10/00	SPEARVILLE 345 KV	Wolf 345 KV	1
20046	10943	707	Balanced Portfolio	Build new 345 kV line from Knoll to Interception point of Axtell to Knoll line.	\$66,000,000	MIDW	05/01/13	M			Axtell 345 kV	Wolf 345 KV	1
20032	10945	697	regional reliability	Rebuild 21.1 mile HEC - Huntsville 115 kV line and replace CT, wave trap and relays.	\$6,250,000	MIDW	00/01/10	06/01/13		01/27/09	Hutchinson Energy Center 115 KV	Huntsville 115 kV	1
20002			regional reliability	Rebuild 21.9 mile St. John - Pratt 115 kV line with 795 ACSR conductor.	\$9,200,000	MKEC		06/01/13	NTC	01/2//05	St. John 115 kV	Pratt 115 kV	1
	10858 50213	653 30206	regional reliability	Install 9 Myar capacitor bank at Gordon 115 KV.	\$1,000,000	MKEC NPPD	06/01/12	06/01/13	NTC		Gordon 138 kV	Plan I IV KV	+
				Build new 345 kV line from Axtell to interception point of Axtell to Wolf line (Kansas Border). Includes substation expansion at Axtell	1								-
20047	10942	708	Balanced Portfolio	and line reactor.	\$76,000,000	NPPD	06/01/13	м		06/19/09	Axtell 345 kV	Wolf 345 KV	1
				Uprate line and substation equipment to 100 Deg C Raling by 2013. 174 MVA Normal Continuous Rating. 174 MVA 4-Hour									
	11079	817	regional reliability	Emergency Rating.	\$1,000,000	NPPD	06/01/13	06/01/13	NTC		Albion 115 kV	Spaiding 115 kV	1
20029	10843	642	regional reliability	Remove wavefrap at VBI.	\$10,000	OGE	06/01/13			01/27/09	Kilgare 69 kV	VBI 69 KV	1
	10300	235			\$2,500,000	OGE	05/01/13	06/01/13	NTC		Fort Smith 161 kV		1
			regional reliability	Reconductor 2.2 miles to 1590 kmcm ACSR and change terminal equipment at FL Smith and Colony substations to 2000A.					NIC			Colony 161 kV	
20041	10930	700	Balanced Portfolio	Build new 345 kV line from Seminole to Muskogee	\$131,000,000	OGE	12/31/13	M		06/19/09	Seminole 345 kV	Muskogee 345 kV	1
20041	10931	700	Balanced Portfolio	Install 3rd 345/138 kV transformer at Seminole	\$4,000,000	OGE	12/31/13	M		06/19/09	Seminole 138 kV	Seminole 345 kV	3
	11139	862	regional reliability	Rebuild 2 mile Sub 905 North - Sub 928 line. Change CT tap settings, and replace line jumpers for 110 MVA rating.	\$4,638,000	OPPD		06/01/13	NTC		SUB 906 North 69 KV	SUB 928 69 kV	1
	11141	864	regional reliability	Increase line clearances to allow the use of a higher conductor rating.	\$272,000	OPPD		06/01/13			SUB 907 69 KV	Sub 919 69 kV	1
	11044	791	regional reliability	Build new 4 mile Hart Industrial Substation - Newhart Substation 115 kV line.	\$2,250,000	SPS	03/16/13	06/01/10	NTC		Hart Industrial 115 kV	Newhart 115 kV	1
	11023	774	regional reliability	Build new 3.7 mile Hastings - East Plant 115kV line.	\$1,700,000	SPS	03/16/13	06/01/10	NTC		Hastings Sub 69 kV	East Plant Interchange 115 kV	1
	11047	793	regional reliability	Reconductor 5.5 mile Gains County Interchange - Legacy 115 kV line.	\$2,320,300	SPS SPS	10/31/73	06/01/13	NTC		Gaines County Interchange 115 kV	Legacy 115 kV Dotter County Interchange 345 kV	1
	11050 11051	795 795	regional reliability	Build new 130 mile 345 kV line from Potter to new Frio-Draw substation at Roosevelt.	\$140,250,000	SPS	12/31/13	06/01/13	NTC	1	Frio-Draw 345kV Erio-Draw 345 kV	Potter County Interchange 345 KV	1
	11061	795	regional reliability regional reliability	Build new Frio-Draw substation with 345/230 kV transformer. Add a second Grave 115/69 kV transformer.	\$900,000	SPS	12/31/13 05/01/13	06/01/13	NTC		Frio-Draw 345 kV GRAVE 3 115 kv	Frio-Draw 230kV Grave 2 69 kV	2
	111049	834	regional reliability	Convert existing 3 mile Portales Interchange - Zodiac 69 KV line to operate at 115 KV.	\$3,487,500	SPS	05/21/13	06/01/13	NTC		Portales Interchange 115 kV	Zodlac 115 kV	1
	10841	640	regional reliability - non OATT	Resag conductor and replace some structures.	\$50,000	SWPA	00/21/10	M		1	Malden 69 kV	New Madrid 69 kV	
	11014	640 769	regional reliability - non OATT	Replace bus and CTs at Norfolk.	\$112,500	SWPA SWPA	1	06/01/13		1	Norfolk 151 kV	Southland 161 kV	1
20030	11014 50186	30178	regional reliability	Install 6 Mvar capacitor bank at Electra 69 kV bus for a total of 18 Mvar at this location.	\$240,000	WFEC	06/01/13		NTC-Modify Timing	01/27/09	Electra 69 kV		
	11115	846	regional reliability	Rebuild 25.2 mlie Anadarko - Blanchard 69 kV as 138 kV.	\$14,737,500	WFEC WFEC		06/01/13	NTC		Anadarko 138 kV	Blanchard 138 kV	1
	11116	846	regional reliability	Rebuild 2 mile Blanchard - OU Switchyard 69 kV as 138 kV.	\$1,125,000	WFEC		06/01/13			Blanchard 138 kV	OU Switchyard 138 kV	1
20006	50111	30105	Zonal Reliability	Install 30 Mvar capacitor at Springhill 115 kV.	\$1,000,000		05/01/13	M			Springhili 115 kV		
20059	50231	30227	transmission service	Add 15 Mvar Cap bank at Athens	\$607,500	WR	06/01/13				Athens 69 kV		
	50298	30260	zonal - sponsored	1 stage of 10.8 Mvar	\$432,000	WR	06/01/13	M			Scranton 115 KV		
	50299	30261	zonal - sponsored	1 stage of 10.8 Mvar	\$432,000	WR	06/01/13	M			Shawnee Heights 115 KV		
	10603 10844	467 643	regional reliability	Replace wave traps on Gill - Interstate 138 kV line for a new rating of 232/256 MVA.	\$50,000	WR		06/01/13	NTC		GII Energy Center East 138 kV	Interstate 138 kV	1
20033			regional reliability	Tap the Neosho - Twin Valley line into Altamont.	\$4,000,000	WR	06/01/13	M		01/27/09	TWIN VALLEY NO. 1 MOUND VALLEY 138	NNEOSINO 138 KV	1
20063	10846	645	regional reliability	Add second transformer in 17th Street substation. Install second Aubum Road 230/115 kV transformer.	\$2,400,000	WR	06/01/13		NTC Modify Timica	11/02/09	17TH Street 4 138 kV Aubum 230 kV	17TH Street 2 69 KV	1
20033	10578 11082	533 819	regional reliability	Rebuild 5:56 mile Gill Energy Center East - MacArthur 60 kV line. Replace substation bus and jumpers at MacArthur 69 kV.	\$12,622,500	WR	06/01/13	06/01/15 06/01/13	NTC-Modify Timing NTC	01/2//09	Aubum 230 KV Gill Energy Center East 69 KV	Auburn 115 kV Macarthur 69 kV	- 2
20059			regional reliability transmission service	Rebuild approximately 7 miles of line with 954 komi ACSR to achieve a minimum 1200 amp emergency rating.	\$3,340,000	WR	07/01/13	00/01/13	NIG	00/18/00		Coffey County No. 3 Westphalla 69 Kv	1
20059	50233 50234	30224 30224	transmission service	Rebuild approximately 4 miles of line with 954 kcmil ACSR to achieve a minimum 1200 amp emergency rating.	\$1,945,000	WR	01/01/13	1		09/18/09	Burlington Junction 69 kV Burlington Junction 69 kV	Wolf Creek 69 kV	1
20059	50234	30224	transmission service	Rebuild approximately 1 mile of line with 954-KCM ACSR to achieve a minimum 600 amp emergency rating.	\$593,775	WR	11/01/13			09/18/09	LEHIGH TAP 69 KV	United No. 9 Conger 69 KV	1
20059	10574	529	regional reliability	New 345 kV line from Oklahoma/Kansas Stateline or the interface with the OG&E line segment to Rose Hill to achieve 3000 amp or	\$84,669,696	WR	01/01/13	м		09/18/09	LEHIGH TAP 69 KV Sooner 345 KV	Rose Hill 345 kV	1
			in the second second		100,000,000	Year 2014							
20000	10584	450	regional reliability	Install 345/161 kV transformer at Shipe Road.	\$13,104,000	AED	05/01/14	м		02/43/09	Shine Boad 3/5 kV	Shipe Road 161 KV	1
20000			regional reliability	Install 22 miles of new 345 kV, 2-954 ACSR line.	\$34,085,000	AFD	05/01/14	M		02/13/08	Shipe Road 345 kV Flint Creek 345 kV	Shipe Road 345 KV	1
20000 20000	10585 10582	450 450	regional reliability	Install 2 miles of 161 kV from new Shipe Road Substation to East Centerion Substation.	\$11,962,000	AEP	05/01/14 05/01/14	M		02/13/08	Shipe 161 kV	East Centerton 161 kV	1
20027	10853	649	regional reliability	Reconductor 2.15 mile section of 115 kV line with 795 ACSR.	\$2,150,000	AEP	06/01/14	M		01/27/09	Lone Star 115 kV	Locust Grove 115 kV	1

	10577	445	regional reliability	Rebuild 5.4 mile Big Sandy - Perdue 69 kV line from 477 ACSR to 1272 ACSR.	\$5,400,000	AEP	05/01/14	06/01/15			Big Sandy 69 kV SE Texarkana 69 kV	Perdue 69 kV	
	11153	873	regional reliability	Upgrade 600 A breaker and two switches at Texarkana Plant.	\$250,000	AEP		06/01/14			SE Texarkana 69 kV	Texarkana 69 kV	
	11169	880	regional reliability	Upgrade 2 sets of switches at Rock Hill and 1 set of switches at Beckville bus.	\$200,000	AEP		06/01/14			Beckville 69 kV	Rock Hill 69 kV	
	10849	648	zonal - sponsored	Covert from 59 kV to 138 kV	\$8,837,000	DETEC	05/01/14				Martinsville 138 kV	Shady Grove 138 kV	
	10850	648	zonal - sponsored	Covert from 59 kV to 138 kV		DETEC	05/01/14				Shady Grove 138 kV	Central Hleghts 138 kV	
	10850 10851	648	zonal - sponsored	Covert from 59 kV to 138 kV Covert from 59 kV to 138 kV		DETEC	05/01/14 05/01/14				Central Hiephts 138 kV	Fitze 138 kV	
	10852	648	zonal - sponsored	Covert from 59 kV to 138 kV		DETEC	06/01/14				Filze 138 kV SUB 403 - Jasper West Tap 69 kV SUB 131 - Diamond Junction 69 kV Sub 167 - Riverton 69 kV	Tempson 138 kV	
	11074	812	regional reliability	Replace jumpers.	\$100,000		66.61.14	06/01/14			SUB 403 - Jasper West Tap 69 kV	SUB 249 - Boston East 69 kV	_
	11073	812 811	regional reliability	Raise structures on Diamond Jct Sarcoxie Southwest 69 kV line to achieve a new rating B of 44 MVA.	\$50,000	EDE		06/01/14			SUB 131 - Diamond Junction 69 kV	SUB 249 - Boston East 69 kV SUB 362 - Sarcoxie Southwest 69 kV	
		437	regional reliability	Renare switch on transfer hus at Subt 167 for Rate B = 91 MVA	\$75,000		05/01/14	06/01/15			Sub 167 - Riverton 69 kV	SLIB 278 - Galena Northeast 69 kV	_
20036	10567	202	regional reliability	Replace switch on transfer bus at Sub# 167 for Rate B = 91 MVA. Reconductor 1.0 Mile of 4/0 ACSR with 336 ACSR for 65 MVA Rate B	\$75,000 \$400,000	EDE	00/01/14	06/01/14		01/27/09	SUB 436 - Webb City Cardinal 69 kV	SUB 278 - Galena Northeast 69 kV SUB 110 - Oronogo Junction 69 kV	_
20000	50260 10633	202 30247	regional reliability	Install 7.2 Mvar capacitor bank at Wagner 69 kV.	\$201,600	GRDA		06/01/14		01127/00	Wagoner 69 kV	SOD THE CHARGE SERVICE RV	-
	10633	30247	regional reliability	Internal 7.2 www.capabilut bank of waiper 65 kV.	4291,000	MIDW		06/01/14 06/01/14			Huntsville 115 kV	St. John 115 kV	-
	50249	489 30237	regional reliability	Rebuild 26.55 mile Huntsville - St. John 115 kV line and replace CT, wavelrap, breakers, and relays. Install 18 Mvar capaotor bank at Holdrege 115 kV.	\$5,250,000 \$1,000,000	NPPD	06/01/14	06/01/14			Holdrege 115 KV	SL JOHN TIS KV	
	00245	00207	regional reliability	niedzi to mine capacitati o nik ak noticige i to kv.	\$1,000,000	NEED	00/01/14	00/01/14			The area of the second s		-
	11078	816	regional reliability	Uprate line and substation equipment to effect 100 Deg C Rating by 2014. 137 MVA Normal Continuous Rating. 137 MVA 4-Hour	\$1,000,000	NPPD	05/01/14	06/01/14			Albion 115 kV	Genoa 115 kV	
				Emergency Rating.									_
	11143	889		Increase line clearances to allow the use of a higher conductor rating. Change CT tap settings.	\$251,000	OPPD		06/01/14			Sub 921 69 kV	Sub 942 69 kV	_
	11137	860	regional reliability	Increase line clearances to allow the use of a higher conductor rating.	\$105,000	OPPD		06/01/14			SUB 901 69 KV	Junction 205 69 kV	
	11138	861	regional reliability	Increase line clearances to allow the use of a higher conductor rating.	\$251,000	OPPD		06/01/14			SUB 910 69 KV	Junction 205 69 kV	
	11142	865	regional reliability	increase line clearances to allow the use of a higher conductor rating.	\$253,000	OPPD		06/01/14			Sub 917 69 kV	Sub 918 69 kV	
	11191	897	zonal - sponsored	New Distribution Sub - WR Airport		OGE	05/01/14	M			36 & Meridian 138 kV	WRAirport 138 kV	
	11192	897	zonal - sponsored	New Distribution Sub - WR Aliport		OGE	05/01/14	M			WRAirport 138 kV	Pennsylvania 138 kV	
20041	10932	701	Balanced Portfolio	Build new 345 kV line from Woodward EHV to Border	\$105,000,000	OGE	05/19/14	M		06/19/09	Stateline 345 KV	Woodward EHV 345kv	-
20041	10933	701	Balanced Portfolio	Install 2nd 345/138 kV transformer at Woodward EHV	\$15,000,000	OGE	05/19/14	M			Woodward EHV 138 kV	Woodward EHV 345 kV	-
20041						SPS	05/19/14	06/01/14		00/19/09		Woodward EHV 345 KV	_
	50275	30262	regional reliability	Install 7.2 Mvar at Canadian Sub	\$291,600						Canadian 115 kV		_
	11055	796	regional reliability	Add second 230/115 kV transformer at Grassland Interchange.	\$11,250,000	SPS		06/01/14			Grassland Interchange 115 kV	Grassland Interchange 230 kV	
20043	10936	704	Balanced Portfolio	Build new 345 kV line from Tuco to Border	\$122,597,500	SPS	05/19/14	M		06/19/09	Tuco Interchange 345 kV	Stateline 345 kV	
20043	10937	704	Balanced Portfolio	Build Border at Interception point of Woodward to Tuco line.	\$14,880,000	SPS	05/19/14	M		06/19/09	Stateline 345 kV		
	11007	764	regional reliability	Upgrade both Happy County 115/69 kV transformers to 84 MVA.	\$1,890,000	SPS	05/01/14	06/01/14			Happy Interchange 115 kV	Happy Interchange 69 kV	-
	11009	764	regional reliability	Upgrade both Happy County 115/69 kV transformers to 84 MVA.	\$1,890,000	SPS	05/01/14	06/01/14			Happy Interchange 115 kV	Happy Interchange 69 kV	-+
	11093	826	regional reliability	Replace existing 149/171 MVA Chaves 230/115 kV transformer with 225 MVA transformer.	\$11,250,000	SPS	05/01/14	06/01/14			Chaves 115 kV	Chaves 230 kV	-+
	111093	836	regional reliability	Move load from Muleshoe 69 kV to Muleshoe 115 kV.	\$3,318,750	SPS	05/01/14	06/01/14			Muleshoe 69 kV	Muleshoe E 115 KV	$\rightarrow$
			regional reliability	Note to a from while she of the holdesheef 15 kV.	\$3,310,750				170				-
	11107	839	regional reliability	Build new 22.2 mile Kress Interchange - Plainview County 115 kV.	\$14,737,300	SPS	05/01/14	06/01/14	NTC		Kress Int 115 kV	Plainview CTY 115 kV	_
	11108	839	regional reliability	Add new Plainview County 115/69 kV transformer with 44/50.6 MVA ratings.	\$990,000	SPS	05/01/14	06/01/14	NTC		PlanMew Co 69 kV	Plainview CTY 115 kV	
	11109	840	regional reliability	Build new 9.8 mile Cox - Plainview 115 kV line unit.	\$7,762,500	SPS	06/01/15	06/01/14	NTC		Cox 115 KV	Plainview CTY 115 kV	
	11122	852 883	regional reliability	Replace wave trap with 1200 A minimum.	\$225,000	SPS SPS	06/01/14	06/01/14			Jones 230 kV	Grassland 230 KV	
	11172	883	regional reliability	Build new second Jones - Grassland 230 kV line.	\$30,395,000	SPS	05/16/14	06/01/11	NTC		Jones 230 kV	Grassland 230 KV	
	11197	900	regional reliability	Reconductor FRIO-DRAW 0.56 miles 115 kV to 795 ACSR line	\$315,000	SPS		06/01/14			Frio Draw 115 KV	Farmers Electric REC-Clovis 115 kV	
	50119	900 30113	regional reliability - non OATT	Install 30 Myar capacitor at Giencoe 161 kV substation	\$1,215,000		05/01/14	06/01/14 06/01/14			Glencoe 161 kV		
	10819	631	regional reliability - non OATT	Reconductor line to 335/335 MVA. Replace both Carthage auto transformers with larger units.	\$10,095,750	SWPA SWPA		06/01/14 06/01/14			Asherville 161 kV	idalia 161 kV	-+
	10015	001	regional reliability - non OATT	Regional Josh Cartinopa sub transformers with Inner units	FE COE DOD	SWPA		06/01/14			Carthage 161 kV	Carthage 69 kV	-
20003	50045	651 30039	regional reliability	Install 6 Mvar capacitor at Esquandale 69 kV.	\$243,000	WEEC	05/01/14	M		01/27/09	Esquandale 69 kV	Contrade op hy	-
	10569	524	regional reliability	Reconductor 3 mile Gypsum - Russell 69 kV line from 1/0 to 336.4 ACSR.	\$900,000	WFEC WFEC	00101714	06/01/14		01121100	Gypsum 59 kV	Russell 69 kV	-
0059	10669 50230	524 30226	transmission service	Add 6 Myar Cap bank at Alloona East	\$607.500	WR	05/01/14	00101114		09/18/09	Altoona East 69 kV	I CODUCE CO KY	-
0063	10713	563	regional reliability	Replace 69 kV disconnect switches at Aquarius with a minimum 600 amp emergency rating	\$75,000	WR	06/01/13	M		11/02/09	Litchfield 69 kV Halstead South 138 kV	Aquarlus 69 kV	-
0000	10713 10679	534	regional reliability	Replace Halstead 138/69/13.2 kV transformer with 100/110 MVA unit.	\$1,400,000	WR	05/01/14		NTC-Modify Timing	01/27/00	Halstead South 138 kV	Halstead 69 kV	-
20033	10505	469		Repair Concerning the Alexies of Million (Alexies)	\$20,000	WR	00/01/14	06/01/11 M	NTC-WOOITY TITLING	01/2/105	Gatz 69 KV	Newton 69 kV	-
	10605 10997	405	regional reliability	Reset CTs on Moundridge - Newton 69 KV line (multiple rating changes).	\$20,000	WR		06/01/14			County Line 115 kV	Goodyear Junction 115 kV	-
				Tear down and rebuild did the Good wear during on the country line.							County Line 110 kV	Goodyear ourroadin i to ky	
20059	10997	700	transmission service		\$4,240,000		04/01/14			00/18/00			
0059	50236	30224	transmission service	Tear down and rebuild 6.6 mile County Line - Goodyear Junction 115 kV line. Rebuild approximately 9 miles of line with 954 komil ACSR to achieve a minimum 1200 amp emergency rating.	\$4,249,000	WR	04/01/14			09/18/09	Green 69 kV	Corrye County No. 3 Westphalia 69 kV	
0059	50236					WR Year 2018	04/01/14						
	50236					WR	5	06/01/15			Weatherford 69 kV	Thomas Tap 69 kV	
	50236	876 537	regional reliability regional reliability	Rebuild 0.9 mile Weatherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Weatherford wavetrap. Build new 9.2 mile Substation 383 - Monett 5 161 kV line.		WR Year 2018	5	06/01/19	NTC-Modify Timing		Weatherford 69 kV SUB 383 - Monett 161kV	Thomas Tap 69 kV South Monett 161 kV	
	50236 11156 10585 10586	876 537 537	regional reliability regional reliability regional reliability	Rebuild 0.9 mile Westherford - Thomas Tao 59 kV line from 40 ACSR with 795 ACSR, Replace Westherford wavetrap. Build new 9.2 mile Substation 383 - Monett 3 fel hV line. Instal 3 - winding transformer connecting new 161 kV bus to Monett Chy South 65 kV.	\$1,000,000 \$7,369,319 \$8,000,000	WR Year 2018 AEP EDE EDE	05/01/15	06/01/19	NTC-Modify Timing NTC-Modify Timing		Weatherford 69 kV	Thomas Tap 69 kV South Monett 161 kV SUB 376 - Monett City South 69 kV	
036	50236 11156 10585 10586	876 537 537	regional reliability regional reliability regional reliability regional reliability	Rebuild 0.9 mile Weatherford - Thomas Tao 69 kV line from 40 ACSR with 795 ACSR. Replace Weatherford wavetrap, Build new 92 mile Substation 333 - Monett 5 161 kV line Instal 3-winding transforme connecting new 161 kV bus to Monett City South 69 kV. Reconductor 1 an with 338 ACSR	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000	WR Year 2018 AEP EDE EDE	05/01/15	06/01/19 06/01/19 06/01/18	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09	Weatherford 69 kV SUB 383 - Monett 161 kV South Monett 161 kV Monett CHV South Jct. 69 kV	Thomas Tap 69 kV South Monett 161 kV SUB 376 - Monett City South 69 kV	
1036 1036	50236 11156 10585 10586	876 537	regional reliability regional reliability regional reliability	Rebuild 0.9 mile Weatherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Weatherford wavetrap. Build new 9.2 mile Substation 383 - Monett 5 161 kV line.		WR Year 2018	5	06/01/19	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09	Weatherford 69 kV SUB 383 - Monett 161kV	Thomas Tap 69 kV South Monett 161 kV	
1036 1036 1042	50236 11156 10685 10686 10681 10935	876 537 537 536 703	regional reliability regional reliability regional reliability regional reliability Balanced Portfolio	Rebuild 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavetrap. Build new 9.2 mile Substation 383 - Monett 3 if it NV line. Install 3-windling transformer connecting new 161 kV bus to Monett CAN South 69 kV. Reconculator 1.2 m with 338 ACSR. The Maximum 2010 bus in Handmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000	WR AEP EDE EDE EDE EDE KCPL	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Weatherford 69 kV SUB 383 - Monett 161 kV South Monett 161 kV Monett Chy South Jot. 69 kV latan 345 kV	Thomas Tap 69 KV South Monett 161 KV SUB 376 - Monett City South 69 KV Monett City East 69 KV Nashua 345 KV	
0059 1036 1036 1042 1042	50236 11156 10685 10686 10681 10935 10945	876 537 537 536 703 703	regional reliability regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio	Rebuild 0.9 mile Weatherford - Thomas Tao 69 kV line from 40 ACSR with 795 ACSR. Replace Weatherford wavebap, Build new 9.2 mile Substation 383 - Monett 5 161 kV line Instal 3-winding transformer connecting new 161 kV bus to Monett Cfly South 69 kV. Reconductor 1 2 with 393 ACSR Tap Natanua 345KV bus in Hawfrom - St. Joseph 345 kV line. Build new 345 kV line from Iatan to Nashua. Instal new 3451kV bits V transformer 41 Nashua.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000	WR Year 2015 AEP EDE EDE EDE KCPL KCPL	05/01/15	06/01/19 06/01/19 06/01/18 M	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Weatherford 69 kV Solb 363 - Monett 161 kV South Monett 161 kV Monett City South Jot. 69 kV Jatan 345 kV Nashua 345 kV	Thomas Tap 69 kV South Monett 151 kV SUB 376 - Monett City South 69 kV Monet City East 69 kV	
1036 1036 1042	50236 11156 10685 10686 10681 10935 10945 50198	876 537 537 536 703 703 703 30191	regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio Relanced Portfolio	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 9.2 mile Substation 333 - Monett 5 if 1 kV line. Install - swindly mandformer connecting new 161 kV bus to Monett CNy South 69 kV. Reconcludor 1.2 mil with 338 ACSR. Try blashua 3454 No lish Handhorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345161 kV linanformer at Nashua. Instal anew 345161 kV linanformer at Nashua.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000	WR Year 2015 AEP EDE EDE EDE KCPL KCPL MIDW	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/18	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Weatherford 69 kV SUB 383 - Monett 161 kV South Monett 161 kV Monett City South Jot. 69 kV Jajan 345 kV Nashua 345 kV	Thomas Tap 69 KV South Monett 161 KV SUB 376 - Monett City South 69 KV Monett City East 69 KV Nashua 345 KV	
036 036 042	50236 11156 10585 10585 10581 10581 10535 10945 50198 50199	876 537 536 703 703 30191 30192 757	regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio regional reliability regional reliability	Rebuils 0.5 mile Wextherford - Thomas Tao 69 kV line from 40 ACSR with 795 ACSR. Replace Weatherford wavebrap. Build new 9.2 mile Substation 333 - Monett 5 161 kV line. Instal 3-winding transformer connecting new 161 kV bus to Monett City South 69 kV. Reportudent 1 2 with 338 ACSR. Tap Nashua 345KV bus in Hawhorn - 5L Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal a solitional KV bus mile Alashua Instal 3 solitional Mixer cap at Namey 115 kV for a lota 8 Mixer Instal 3 solitional Mixer cap at Name 115 kV for a lota 8 Mixer	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$180,000	WR Year 2018 AEP EDE EDE EDE KCPL KCPL MIDIW MIDW	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Weatherford 69 kV SUB 383 - Monett 161kV South Monett 161 kV South Monett 161 kV Iafan 345 kV Nashua 345 kV Kinsiley 115 kV Paarnee 115 kV	Thomas Tap 69 kV Souln Monett 161 kV SuB 375 - Monett Chy South 69 kV Monet Chy East 69 kV Naehua 345 kV Naehua 345 kV	
036	50236 11156 10585 10585 10581 10581 10535 10945 50198 50199	876 537 536 703 703 30191 30192 757	regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 3.2 mile Substation 333 - Monett 5 if 1 kV line. Install - avvinging nandormer connecting new 161 kV line. The Jackbard 342 MV bis In Handhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV linandormer at Nashua. Instal avvinging Namera 30 ACSR. Install - avvinging Namera 30 ACSR. Install - avvinging Namera 30 ACSR. Install - avoid Namera 30 ACSR. Install - adolitional Minar cap at Changer 115 kV for a bola 6 Minar Install - adolitional Minar cap at Plannee 115 kV for a bola 6 Minar Install - adolitional Minar cap at Plannee 115 kV for a bola 6 Minar Install - adolitional Minar cap at Plannee 115 kV for a bola 6 Minar	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$180,000	WR Year 2018 AEP EDE EDE EDE KCPL KCPL MIDIW MIDW	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15 06/01/15	NTC-Moath Timing NTC-Moath Timing	01/27/09 01/27/09 06/19/09	Weatherford 56 kV SUB 353 - Monett 16 itW Subn Monett 16 itW Monett Chr South Jot 69 kV Jialan 345 kV Nachua 345 kV Paanee 115 kV Paanee 115 kV	Thomas Tap 69 kV South Momett 161 kV SUB 375 - Momett Chr South 69 kV Monett Chr East 69 kV Maehua 345 kV Naehua 161 kV Woodward Disthot 135 kV	
1036 1036 1042	50236 11156 10685 10685 10686 10935 10935 10945 50198 50198 50198 1000 10076	876 537 537 536 703 703 703 30191 30192 757 670	regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio regional reliability regional reliability regional reliability	Rebuils 0.2 mile Westherford - Thomas Tap 68 kV line from 40 ACSR with 795 ACSR. Resiace Westherford wavetrap Buils new 9.2 mile Substation 333 - Monett 5 161 kV line. Instal 3-windlig transformer connecting new 161 kV bus to Monett CSN South 69 kV. Reconsultor 1.2 m with 338 ACSR. Transformer 2000 Statistic and the statistic Transformer 2000 Statistic and the statistic Instal new X45151 kV Institutioner at Nativa Instal and the X45151 kV Institutioner at Nativa Instal 3 actional National and Statistic and the statistic and statistic and the stat	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000	WR AEP EDE EDE KCPL KCPL MIDW OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09	Wedherford 65 KV SUB 5451 - Nomett 16 1KV South Monett 16 1KV Monett Chr South John John Star Idan 345 KV Kinsley 115 KV Windfarm 136 KV Windfarm 136 KV Ancada 345 KV	Thomas Tap 69 kV South Monett 161 kV SuB 375 - Monett Chy South 69 kV Monet Chy East 69 kV Naehua 345 kV Naehua 345 kV Naehua 161 kV Woodward District 138 kV Arcadia 138 kV	
036	50236 11156 10685 10685 10681 10935 10945 50198 50198 50199 11000 10676 11129	876 537 537 536 703 703 703 30191 30192 757 670	regional reliability regional reliability regional reliability regional reliability Balaneed Portfolio Balaneed Portfolio Regional reliability regional reliability regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 32 mile Substation 333 - Monett 5 if 1 kV line. Install - Avinding mandformer connecting new 161 kV line. Tap Vashub 345 VD so in Handhorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV linanformer at Nashua. Install - Substation Marc aga I Rhomagn 115 kV for a blat 8 War. Resonaution Tag and Paanee 115 kV for a blat 8 Mar. Resonaution Tag and Paanee 115 kV for a blat 8 Mar. Install Sactiona Marc aga I Rhomagn 115 kV for a blat 8 Mar. Resonaution Tag and Install Resonaution Tag. Install Anal Nar aga I Paanee 115 kV for a blat 8 Mar. Install Anal Marc aga I Rhomagn 115 kV for a blat 8 Mar. Install Anal Marc aga I Rhomagn 115 kV for a blat 8 Mar. Install Resonaution Tag and Install Resonaution Tag. Install Resonaution Tag and KV. Install Resonauting KV. Install Reson	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$180,000	WR AEP EDE EDE KCPL KCPL MIDW OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Wedherford 65 KV SUB 5451 - Nomett 16 1KV South Monett 16 1KV Monett Chr South John John Star Idan 345 KV Kinsley 115 KV Windfarm 136 KV Windfarm 136 KV Ancada 345 KV	Thomas Tap 69 KV South Women 161 KV SUB 375 - Monet Chy South 69 KV Monet Chy East 69 KV Nashua 345 KV Nashua 161 KV Wootward District 138 KV Arcadia 138 KV Cushing 138 KV	
036 036 042	50236 11155 10685 10685 10686 10945 50198 50199 11000 10876 11129 11130	876 537 536 703 703 30191 30191 30192 757 670 858 858	regional reliability regional reliability regional reliability Balanose Partfolio Balanose Partfolio Balanose Partfolio regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuild 0.9 mile Westherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Westherford wavetrap. Build new 9.2 mile Substation 383 - Monett 5 11 kV line. Install 3-winding transformer connecting new 161 kV bus to Monett CNx South 69 kV. Reconculotr 1.2 mile M33 ACSR. Tay Assault 3540 bus in Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assault 3540 bus in Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assault 3540 bus in Anathomer at Nashua Install anew 345161 kV transformer at Nashua Tay Assault 3540 bus character 11 kV for a table K Mar Medimulator 120 mile FPS. Safetin 6 W roomskot District line to 1990 AS52. Install Innic Anathol 345138 kV addimatormer Convert 1 mile Stillware. Spring Valler 9 kV line to 138 kV.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$180,000	WR Year 2018 AEP EDE EDE EDE KCPL KCPL MIDIW MIDW	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Weatherford 56 KV SUB 363 - Monet 15 KV South Monet 16 16 KV Monet CVS South Jot, 66 KV Jaan 365 KV Nachua 345 KV Chanter 11 SV Paanter 11 SV Paanter 11 SV Arcatal 345 KV Mehan 138 KV Mehan 138 KV	Thomas Tap 69 KV South Worket 161 KV SUB 375 - Monat CM south 69 KV Monet City East 69 KV Naetrua 355 KV Naetrua 161 KV Woodsam Dietind 138 KV Ancadia 138 KV Cushina 138 KV Cushina 138 KV	
036 036 042	50236 11156 10685 10686 10886 10935 10945 50199 11000 10876 11129 11130	876 537 536 703 703 30191 30191 30192 757 670 858 858	regional reliability regional reliability regional reliability englonal reliability Balancee Portfolio Balancee Portfolio regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebap. Build new 32 mile Substation 333 - Monett 5 if 1 kV line. Install avvinition transformer connecting new 161 kV line. The Jackbus 24 Vision In Handhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV lineInformer at Nashua. Instal avvinition Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Instal 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Instal 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Instal 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Instal 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Install 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Install 3 adoltional Mixar cap at Rinage 115 kV for a Isbat 6 Mvar Install Anditional 345/13 kV audotanatomer. Convert 5 mile Billwater - Cupating 69 kV line to 138 kV. Convert 6 mile Singkater 5 kV line to 138 kV.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$180,000 \$4,200,000 \$12,000,000	WR AEP EDE EDE KCPL KCPL MIDW MIDW OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Washerford 55 KV SUB 353 - Moneti 16 IKV SUB 353 - Moneti 16 IKV Monet Colt South xoti 69 KV Jaan 345 KV Subay 115 KV Paanet 115 KV Windfam 138 KV Arcadia 345 KV Stindaret 138 KV Stillwart 138 KV	Thomas Tap 69 KV South Momett 161 KV SUB 375 - Monett Chr South 69 KV Monett Chr East 69 KV Naehua 345 KV Naehua 161 KV Woodward Diethof 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV	
036 036 042	50236 11156 10585 10585 10585 10585 10935 10945 50199 11000 10876 11129 11130 11131	876 537 537 536 703 703 30191 30192 757 670 858 858 858 858 858	regional reliability regional reliability regional reliability Balanose Partfolio Balanose Partfolio Balanose Partfolio regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuild 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR, Replace Westhenford wavetrap. Build new 9.2 mile Substation 383 - Monett 3 161 kV line. Instal 3-windling transformer connecting new 161 kV bus to Monett CIX South 59 kV. Reconcludor 1.2 m with 384 ACSR. Try Nashua 345 Vol bin H Hadmonr - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Try Nashua 345 Vol bin I Hadmonr - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tristal 3-windling that Aca 291 KTNegel 115 kV for a lotal 8 Mvar Instal a socilitoria Murc aga I Fransen 115 kV for a lotal 8 Mvar Instal 3 adolitoria Murc aga I Fransen 115 kV for a lotal 8 Mvar Instal 1 Murc Acasila XL Murc aga I Fransen 115 kV for a lotal 8 Mvar Instal Tur Acasila 345 V3 kV autidionationner. Instal Tur Acasila 345 V3 kV autidionationner. Notice Tur Bin Stationer - Software 34 kV line 10 38 kV. Convert 3 mile Stationation 56 kV line to 138 kV.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$180,000	WR Year 2015 AEP EDE EDE KCPL KCPL KCPL MIDW OGE OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/18 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09	Wastherford 59 KV SUB 383 - Monet 15 KV South Monet 16 16 KV Monet CVS South Jot, 69 KV Jatan 345 KV Chanter 11 SV Paanter 11 SV Paanter 11 SV Paanter 11 SV Paanter 13 SV Mehan 13 SV String Valler 13 SV Scring Valler 13 SV	Thomas Tap 69 KV South Momet 161 KV SUB 375 - Monet CM South 69 KV Monet City East 69 KV Naetrua 345 KV Naetrua 161 KV Wootward Diethof 138 KV Ancedia 138 KV Cushina 138 KV Cushina 138 KV Metan 138 KV	
036 036 042	50236 11156 10685 10686 10886 10935 10945 50199 11000 10876 11129 11130	876 537 536 703 703 30191 30191 30192 757 670 858 858	regional reliability regional reliability regional reliability englonal reliability Balancee Portfolio Balancee Portfolio regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuils 0.3 mie Wasthenford - Thomas Tas 69 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 3.2 mie Substation 333 - Monett 5 if 1 kV line. Install - avniding transformer connecting new 161 kV line. Build new 345 kV. Ine from latan to Nashua. Tag Nashua 349 kV bis in Handhorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV Instructioner at Nashua. Instal ave 345/161 kV line Mora 20 at Charger 115 kV for a Ioda's M war Instal 3 abolitoria Mixar cap at Charger 115 kV for a Ioda's M war Instal 3 abolitoria Mixar cap at Charger 115 kV for a Ioda's M war Instal 3 abolitoria Mixar cap at Charger 115 kV for a Ioda's M war Instal 3 abolitoria Mixar cap at Charger 115 kV for a Ioda's M war Instal 3 abolitoria Marca cap at Charger V Iona Ioda's M war Instal 3 abolitoria Marca cap at Charger 9 KV na Ioda's M war Instal Iona 2000 kW audiotandomer. Comwett 3 mie Buildwater - Soring Vallev 98 kV line to 138 kV. Comwett 3 mie Buildwater - Soring Vallev 98 kV line to 138 kV. Comwett 3 mie Buildwater - Soring Vallev 98 kV line to 138 kV. Comwett 3 mie Soring Vallev - Kinge 69 kV line to 138 kV.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$180,000 \$4,200,000 \$12,000,000	WR AEP EDE EDE KCPL KCPL MIDW MIDW OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolly Timing NTC-Moolly Timing	01/27/09 01/27/09 06/19/09	Washerford 55 KV SUB 353 - Moneti 16 IKV SUB 353 - Moneti 16 IKV Monet Colt South xoti 69 KV Jaan 345 KV Subay 115 KV Paanet 115 KV Windfam 138 KV Arcadia 345 KV Stindaret 138 KV Stillwart 138 KV	Thomas Tap 69 KV South Momett 161 KV SUB 375 - Montel Chr South 69 KV Monett Chr East 69 KV Naehua 345 KV Naehua 161 KV Woodward Diethof 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV	
1036 1036 1042	50236 111156 10585 10585 10585 10935 10945 50198 50199 11000 10876 11129 11130 11131 11131 11132	876 537 537 536 703 703 30191 30192 757 670 858 858 858 858 858 858	regional reliability regional reliability regional reliability estimate Partfolio Batanee Partfolio Batanee Partfolio regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuild 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Repiace Weathenford wavebrap. Build new 9.2 mile Substation 383 - Monett 51 eV line. Instal 3-winding transformer connecting new 161 kV los to Monett CN South 69 kV. Reconculot 1.2 m with 338 ACSR. The Saturation 2000 bit Instantion - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tratial 3-winding to Vois In Hawhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal a new 345/161 kV transformer at Nashua. Instal 3 adollonal Mwar cap at Rhame 115 kV for a total 8 Mvar Instal 3 adollonal Mwar cap at Rhame 115 kV for a total 8 Mvar Instal 3 adollonal Mwar cap at Rhame 115 kV for a total 8 Mvar Instal 3 adollonal Mwar cap at Rhame 115 kV for a total 8 Mvar Instal 3 adollonal Mwar cap at Rhame 115 kV for a total 8 Mvar Instal 1 Mar Accapat SN adolfanationmer Commet 1 in the Martin - Cuating 64 kV inte to 138 kV. Commet 3 mile Sprinty Value - Visione 65 kV inte 10 38 kV. Commet 3 mile Sprinty Value - Visione 65 kV inte 10 38 kV. Commet 3 mile Sprinty Value - Visione 65 kV inte 10 38 kV. Tap existing Cushing - Sitistion 138 kV line hito new Greenwood 5ub 138 kV transformer bus and add new Greenwood 138/69/13.8 Vansformer.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$180,000 \$4,200,000 \$12,000,000	WR Year 2015 AEP EDE EDE EDE KCPL KCPL KCPL MIDW OGE OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/18 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 KV SUB 383 - Moneth 16 1KV Sub 383 - Moneth 16 1KV Monet CLV South Jot, 66 KV Jatan 345 KV Konsley 115 KV Paanee 115 KV Windfam 138 KV Arcada 345 KV Arcada 345 KV Arcada 345 KV Samo Valley 138 KV Samo Valley 138 KV Cushing 138 KV	Thomas Tap 69 KV South Women 161 KV SUB 376 - Monet C/h South 69 KV Monet Clip East 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Cushin 138 KV Cushin 138 KV Metan 138 KV Krite 138 KV Bristow 138 KV	
036 036 042	50236 11156 10585 10585 10585 10585 10595 10945 50199 1000 10876 11129 11130 11131 11132 11133 11134	876 537 537 703 703 703 30191 30192 757 670 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability regional reliability Balances Portfolio Balances Portfolio Regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuils 0.9 mie Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebap. Build new 32 mile Substitution 333 - Monett 5 if 1 kV line. Install avvinition transformer connecting new 161 kV line. The January 2000 No In Handhorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV linahorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345/161 kV linahorm - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal avvinition Marca gal nomesi 115 kV for a Iolar 6 Marc Instal 3 adoltonal Marca gal a Change 115 kV for a Iolar 6 Marc Instal 3 adoltonal Marca gal a Change 115 kV for a Iolar 6 Marc Instal Turo Ancalia 345/138 kV audotansformert. Comvert 5 mile Stilwater - Soring Vallev 93 kV line to 138 kV. Convert 5 mile Stilwater - Soring Vallev 93 kV line to 138 kV. Convert 5 mile Stilwater - Soring Vallev 94 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV. Convert 5.7 mile Soring Vallev - Kinge 65 kV line to 138 kV.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$54,444,000 \$4,620,000 \$180,000 \$4,200,000 \$12,000,000 \$16,000,000 \$16,000,000	WR Year 2018 AEP EDE EDE EDE KCPL KCPL MIDW MIDW MIDW MIDW MIDW MIDW MIDW OGE OGE OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/18 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolfv Timing NTC-Moolfv Timing	01/27/09 01/27/09 06/19/09 06/19/09	Wastherfoor 65 kV SUB 383 - Moneti 16 kV South Moneti 16 kV March 263 South Jot. 69 kV March 263 South Jot. 69 kV March 263 South Jot. 69 kV Souther 15 kV Pannet 15 kV Windfam 138 kV String Valley 138 kV Soring Valley 138 kV Cushing 138 kV Cushing 138 kV	Thomas Tap 69 KV South Momett 161 KV Sub 375 - Momett Chr South 69 KV Momett Chr Sast 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV Krige 138 KV Sristow 138 KV Sristow 138 KV	
036	50236 11156 10685 10685 10681 10945 50199 50199 11000 10076 11129 11130 11131 11132 11133 11134 11134	876 537 536 703 703 30191 30192 757 670 858 858 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability regional reliability Bananee Partfolio Bananee Partfolio Regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability regional reliability	Rebuild 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavehap. Build new 92 mile Substation 383 - Monett 51 kV line. Install 3-windling transformer connecting new 161 kV line. Tap Vashua 345 V0 sb in Handhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Install area 345/161 kV frantomer at Nashua. Install 3 additional Mwar cap at Rhange 115 kV for a totall 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a totall 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Install 3 additional Mwar cap at Rhange 115 kV for a total 8 Mwar Connett 1 Am Markan - Cuptering 40 kV nen to 138 kV Connett 3 mile Stimbater. Soring Vallev 59 kV Ine to 158 kV Tap existing Cushing - Britishen 158 kV in the tot 8 kV. Tap existing Cushing - Britishen 158 kV in the tota 8 kV. Tap existing Cushing - Britishen 158 kV in the tota 8 kV. Tap existing Cushing - Britishen 158 kV in the tota 8 kV. Tap existing Cushing - Britishen 158 kV in the tota 8 kV. Tap existing Cushing - Britishen 158 kV in tering new Greenwood 50x 138 kV transformer bus. Tap existing Cushing - Britishen 158 kV inclust into new Greenwood 50x 69 kV transformer bus. Tap existing Cushing Cushing - Britishen 158 kV. Tap existing Cushing - Britishen 158 kV cauchail Marken 158 kV. Tap existing Cushing - Britishen 158 kV cauchail Marken 158 kV. Tap existing Cushing - Britishen 158 kV cauchail Marken 158 kV. Tap existing Cushing - Britishen 158 kV inclust into new Greenwood 50x 69 kV transformer bus. Result 11.1. miller with 554 ACSE cauchail	\$1,000,000 \$7,369,319 \$8,000,000 \$227,500 \$227,000 \$42,000 \$180,000 \$180,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000	WR Year 2015 AEP EDE EDE EDE EDE KCPL KCPL MIDW OGE OGE OGE OGE OGE OGE OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         SUB 353 - Monetil 16 11KV           Sub 7 Monetil 16 11KV         Sub 7 Monetil 16 11KV           Monetil CkV South Jol, 69 KV         Sub 7 Monetil 16 11KV           Manetil Jol, 69 KV         Sub 7 Monetil 16 11KV           Ranne 115 KV         Windfam 138 KV           Arcada JS KV         String Valler 138 KV           Zillinder 105 KV         String Valler 138 KV           Cunning 138 KV         Cunning 138 KV           OlakGrox 65 KV         Staker           OlakGrox 65 KV         String Valler 158 KV	Thomas Tap 69 KV South Women 161 KV SUB 376 - Monet C/h South 69 KV Monet Clip East 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Cushin 138 KV Cushin 138 KV Metan 138 KV Krite 138 KV Bristow 138 KV	
036 036 042	50236 11156 106855 10685 10686 10935 10945 50199 10000 10876 11130 11131 11132 11133 11134 11135 50215	876 537 537 536 703 703 703 703 703 703 703 703	regional reliability regional reliability regional reliability elapional reliability Balance Portfolio Balance Portfolio Regional reliability regional reliability	Rebuild 0.9 mile Westherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Westherford wavetrap. Build new 92 mile Substation 383 - Monett 3 161 kV line. Instal 3-winding Caratoframe connecting new 161 kV bus to Monett CNx South 69 kV. Reconculor 1.2 m with 384 ACSR. Tap Assauta 3540 bus in Hawhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3540 bus in Hawhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3540 bus in Hawhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3540 bus in Hawhorn - St. Joseph 345 kV line. Bus 2000 bus in the Nashua. Tap assauta 3450 bus 2000 bus 115 kV for a 1848 K Maximization and the Company of the Nashua. Tap Assauta 3540 bus 2010 bus 115 kV for a 1848 k Maximization and 2010 bus 2010 bus 115 kV. Comvet 1.4 mile Mashar - Songh 2014 kV KV for a 138 kV. Convert 1.4 mile Markar - Songh 2014 kV KV for 138 kV. Convert 1.4 mile Markar - Songh 2014 kV KV for 138 kV. Convert 1.4 mile Markar - Songh 2014 kV KV for 138 kV. Convert 1.7 mile Songh 2014 kV KV for 138 kV. Convert 1.7 mile Songh 2014 kV KV mel to 138 kV. Convert 1.7 mile Songh 2014 kV KV mel to 138 kV. Tap exemp Cushing - Binston 138 kV line hitton rew Greenwood 50.0 59 kV transformer bus. Republic 1.1 miles. Att Convert 15 kV base. Republic 1.1 miles. Att Convert 15 kV base.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2015 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 06/01/18 06/01/18 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Wastherford 59 KV           SUB 353 - Monet 15 KV           South Monet 16 KV           Monet CKV South Jol, 69 KV           Listin 358 KV           Manie X SK           Monet CKV           Marking 358 KV           Worksmith 15 KV           Wasther 138 KV           Spring Valley 138 KV           Spring Valley 138 KV           Cushing 138 KV           Cushing 138 KV           Cushing 138 KV           Cushing 158 KV           Holdcore 115 KV           Holdcore 115 KV	Thomas Tap 69 KV South Momett 161 KV Sub 375 - Momett Chr South 69 KV Momett Chr Sast 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV Krige 138 KV Sristow 138 KV Sristow 138 KV	
036 036 042	50236 11155 10685 10685 10686 10681 10935 50199 50199 50199 11000 10876 11130 11131 11132 11133 11134 11134 11195 50216	876 537 537 703 703 703 30192 757 658 858 858 858 858 858 858 858 858 858	regional reliability redocal reliability regional reliability regional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 9.2 mile Substation 383 - Monett 51 kV line. Instal 3-windling Charaformer connecting new 161 kV line. Tap Vashua 3450 Volus In Handhorn - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Instal new 345161 kV transformer at Nashua. Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 3 adollonal Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 1 mainton Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 1 mainton Mixar cap al Thomas 115 kV for a total 8 Mvar Instal 1 mainton Mixar cap al Thomas 115 kV for a total 8 Mvar Convert 3 in the Mixar Cap al Thomas 6 V line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Journal 69 kV line to 138 kV. Convert 3 Intel Mixar Mixar Journal 116 kV line 10 KI Mixar Tap abiliting Cak Grave – Hwy 59 Tag 58 kV circuit fino new Greenwood 50b 59 kV linesformer bus. Revulti 11 J Intel KV Bits Kirses 115 kV Jus.	\$1,000,000 \$7,369,319 \$8,000,000 \$227,500 \$227,000 \$42,000 \$180,000 \$180,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000	WR Year 2015 AEP EDE EDE EDE EDE KCPL MIDW MIDW MIDW OGE OGE OGE OGE OGE OGE OGE OGE OGE SEPC SPS	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/18 M 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 55 KV         Statistics - Monet 16 KV           Statistics - Monet 16 KV         Monet CoV South 3dt 65 KV           South Monet 16 KV         Monet CoV South 3dt 69 KV           Salan 326 KV         Monet CoV South 3dt 69 KV           Monet CoV South 3dt 69 KV         Monet CoV           Windfam 138 KV         Acradia 326 KV           Monet To St V         String Valler 138 KV           String Valler 138 KV         Schnig Valler 138 KV           Caning 138 KV         Caning 138 KV           OakGroe 59 KV         Hodomin 115 KV           Kress 115 KV         Swister 115 KV	Thomas Tap 69 KV South Momett 161 KV Sub 375 - Momett Chr South 69 KV Momett Chr Sast 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV Krige 138 KV Sristow 138 KV Sristow 138 KV	
036 036 042	50236 11156 10665 10665 10666 10686 10835 10945 50199 11000 106776 11129 11130 11132 11133 11134 11134 11134 11195 50216 50216	876 537 536 703 703 30191 30192 670 858 858 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability esploral reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuild 0.9 mile Westherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Westherford wavetrap. Build new 92 mile Substation 383 - Monett 51 l V line. Instal 3-winding transformer connecting new 161 kV bus to Monett CNx South 69 kV. Reconculor 1.2 m with 384 ACSR. Tap Assauta 3450 Vols in Hawhorn - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 Vols in Hawhorn - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 Vols in Hawhorn - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 Nine Acad 24 Annuel 115 kV for a latak 1 Max metal 3 additional 347138 KV additional for Nine 1000 ASS2. Instal Innor Analistation 347138 KV additionation for Nine 1000 ASS2. Instal Innor Analistation 347138 KV additionation for Nine Reconculor 12.0 mile FPS. Safatch 50 VVCosted 50 Little 1 fer to 1990 ASS2. Instal Innor Analistation 347138 KV additionation for Nine Convert 1 a mile Safatti 34 KV additionation for Nine Convert 1 amile Mathan - Capitring 49 kV line to 138 kV. Convert 3.7 mile Safatti 138 kV line 110 138 kV. Convert 3.7 mile Safatti 138 kV line 110 138 kV. Convert 3.7 mile Safatti 138 kV line 110 138 kV. Convert 3.7 mile Safatti 138 kV line 110 138 kV. Tap exempt Caming - Bristed 138 kV line 110 138 kV. Tap exempt Caming - Bristed 138 kV line 110 138 kV. Tap exempt Caming - Bristed 138 kV line 110 new Greenwood 50 b 138 kV transformer bus and add new Greenwood 138/69/13.8 Tap exempt Caming - Bristed XI kV bes. Recoluti 1.1 miles with 54 ACSR Camina Add 28.8 Mar capacitor at 154 kV bus. Madd 28.0 Mar capacitor at 154 kV bus.	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/18 M M 06/01/18 06/01/18 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford: 59 KV         SUB 335 - Moment 15 KV           Suppl Status         South Monett 16 KV           Monett CUV South Joll, 69 KV         Station 348 KV           Station 348 KV         Station 348 KV           Manetta 345 KV         Station 348 KV           Wondam 128 KV         Station 348 KV           Station 348 KV         Station 348 KV           Station 348 KV         Station 348 KV           Scring Valley 138 KV         Scring Valley 138 KV           Cushing 138 KV         Scattores 68 KV           Hodcomp 115 KV         Scattores 115 KV           Scattore 115 KV         Scattore 115 KV           Scattore 115 KV         Scattore 115 KV           Scattore 115 KV         Scattore 115 KV	Thomas Tap 69 KV South Momett 161 KV Sub 375 - Momett Chr South 69 KV Momett Chr Sast 69 KV Nashua 345 KV Nashua 161 KV Woodward District 138 KV Arcadia 138 KV Cushing 138 KV Spring Valley 138 KV Krige 138 KV Sristow 138 KV Sristow 138 KV	
036 036 042	\$0236 11166 10885 10886 10886 10885 10886 10935 10945 50199 1000 10945 50199 1100 11132 11133 11134 11133 11134 11135 50215 50300 80300	876 537 537 703 703 20192 757 670 858 858 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability engional reliability Baianoe Portfolio Baianoe Portfolio Regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 32 mile Substation 383 - Monett 5 16 kV line. Install 3-windling transformer connecting new 161 kV line. Tap Savaba 354 No bus in Handhorn - St. Joseph 354 kV line from laten to Nashua. Install new 345161 kV transformer and real S4 kV line. Build new 345 kV line from laten to Nashua. Install a swindling those in Handhorn - St. Joseph 354 kV line. Build new 345 kV line from laten to Nashua. Install a swindling those in Handhorn - St. Joseph 354 kV line. Install 3-additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Cathwet 1 mile Bithware - Cushting 8 kV line to 138 kV. Cathwet 1 mile Stiftware 1 KV line to 138 kV. Cathwet 1 mile Stiftware 5 kV line to 138 kV. Cathwet 2 mile Stiftware 1 KV mile 10 Mar Cathware Cathware 1 KV mile 10 Marca Install Marca aga 1 Rhange 2 KV line to 138 kV. Cathwet 2 mile Stiftware 1 KV line to 138 kV. Cathwet 2 mile Stiftware 1 KV mile 10 Marca Add 28 Marc adapted rat KViess 115 kV Dus. Add 28 Marc adapted rat KViess 115 kV Dus. Install 2 Bitoks of 12 Mar	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2015 AEP EDE EDE EDE EDE KCPL MIDW OGE OGE OGE OGE OGE OGE OGE OGE OGE OGE	06/01/15 06/01/15 06/01/15 06/01/15	0601/19 0601/19 0601/19 0601/19 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         Statile 353- Monett 16 KV           Statile 353- Monett 16 KV         Monet Colv South Jot. 69 KV           Jaion 356 KV         Statile 354 KV           Monett Colv South Jot. 69 KV         Statile 354 KV           Minister 115 KV         Windfam 138 KV           Accasta 354 KV         Statile 354 KV           Windfam 138 KV         Statile 138 KV           Stating V Later 138 KV         Statile 138 KV           Caushing 138 KV         Caushing 138 KV           OakGroe 59 KV         Hodorone 115 KV           Kress 115 KV         Skelster 115 KV           Jakinser 15 KV         JAL 135 KV	Thomas Tap 69 KV South Women 161 KV SUB 376 - Monet Chr. South 69 KV Monet Chr. South 69 KV Naehua 345 KV Naehua 151 KV Woodward District 138 KV Arcadia 138 KV Cushine 138 KV Soring Valley 138 KV Knite 138 KV Knite 138 KV Shistow 138 KV Havy 99 Tap 59 KV Fielcher 115 KV	
036 036 042	\$0236 11155 10585 10585 10585 10585 10545 50199 11000 10875 11129 11130 11132 11133 11134 11134 50215 50216 50216 50201 10100	876 537 537 538 703 30191 30192 757 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability egional reliability Balance Portfolio Balance Portfolio Regional reliability regional reliability	Rebuild 0.9 mile Westhenford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR, Replace Westhenford wavetrap. Build new 9.2 mile Substation 383 - Monett 3 114 V/line. Install 3-winding transformer connecting new 161 kV Vb us to Monett CIX South 69 kV. Reconcludor 1.2 m with 336 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconcludor 1.2 m with 336 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconcludor 1.2 m with 336 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Install a soldinoral More cop al Finance 115 kV for a total 8 Mar Install 3 additional More cop al Finance 115 kV for a total 8 Mar Install 3 additional More cop al Finance 115 kV for a total 8 Mar Install 3 additional More cop al Finance 115 kV for a total 8 Mar Install 3 additional More cop al Finance 115 kV for a total 8 Mar Install 3 additional More cop al Finance 115 kV for a total 8 Mar Install 100 Account 2015 SK additionationner Connect 1 mile Stationation 59 kV line to 138 kV. Connect 3 mile Stating Valler Valler 69 kV line to 138 kV. Connect 3 mile Stating Valler Valler 69 kV line to 138 kV. Connect 3 mile Stating Valler Valler 69 kV line to 138 kV. Connect 3 mile Stating Valler Valler 68 kV line to 138 kV. Connect 3 mile Stating Valler Valler 64 kV line to 138 kV. Connect 3 mile Stating Valler Valler 64 kV line to 138 kV. Connect 3 mile Stating Valler Valler 64 kV line to 138 kV. Connect 3 mile Stating Valler Valler 64 kV line to 138 kV. Tap existing Culture 1.5 kV 65 kV line to 138 kV. Connect 3 mile Stating Valler Valler 64 kV line to 138 kV. Connect 3 mile Stating Valler Valler Contend Recolut 11.1 miles will 54 kV 66 kV line to 138 kV. Contend 30 kV Contend 30 kV kV kV kValler 100 kV kV Recolut 1.1 miles and 54 kV kV contender Recolut 1.1 miles and 54 kV kV kV kV kValler Recolut 1.1 miles and 54 kV kV kV kValler Recolut 1.1 miles and 54 kV kV kValler Recolut 1.1 miles and 54 kV kValler Recolut 1.1 miles and 54 kV kValler Rec	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 KV SUB 383 - Moment 16 IKV SUB 383 - Moment 16 IKV Monet CLV South Jot, 66 KV atan 345 KV Manbua 345 KV Manbua 345 KV Mondam 138 AV Mondam 138 KV Soring Valley 138 KV Soring Valley 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Lap Root 138 KV Lap Root 138 KV	Thomas Tap 69 KV South Womet 161 KV SUB 375 - Monet C/N South 59 KV Monet City East 69 KV Naerius 355 KV Woostaard Dietrici 138 KV Woostaard Dietrici 138 KV Cushino 138 KV Soring View 138 KV Methan 138 KV Soring View 138 KV Helvy 99 Tap 59 KV Fieldher 115 KV Newhart 6 230 KV	
136 136 142	\$0236 11166 10885 10886 10886 10885 10886 10935 10945 50199 1000 10945 50199 1000 11132 11132 11133 11134 11135 50215 50300 80300	876 537 537 703 703 20192 757 670 858 858 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability egional reliability Balance Portfolio Balance Portfolio Regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 32 mile Substation 383 - Monett 5 16 kV line. Install 3-windling transformer connecting new 161 kV line. Tap Savaba 354 No bus in Handhorn - St. Joseph 354 kV line from laten to Nashua. Install new 345161 kV transformer and real S4 kV line. Build new 345 kV line from laten to Nashua. Install a swindling those in Handhorn - St. Joseph 354 kV line. Build new 345 kV line from laten to Nashua. Install a swindling those in Handhorn - St. Joseph 354 kV line. Install 3-additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Install 3 additional Marca aga T Rhange 115 kV for a total 8 Mar Cathwet 1 mile Bithware - Cushting 8 kV line to 138 kV. Cathwet 1 mile Stiftware 1 KV line to 138 kV. Cathwet 1 mile Stiftware 5 kV line to 138 kV. Cathwet 2 mile Stiftware 1 KV mile 10 Mar Cathware Cathware 1 KV mile 10 Marca Install Marca aga 1 Rhange 2 KV line to 138 kV. Cathwet 2 mile Stiftware 1 KV line to 138 kV. Cathwet 2 mile Stiftware 1 KV mile 10 Marca Add 28 Marc adapted rat KViess 115 kV Dus. Add 28 Marc adapted rat KViess 115 kV Dus. Install 2 Bitoks of 12 Mar	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Moolfv Timing NTC-Moolfv Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 KV SUB 383 - Moment 16 IKV SUB 383 - Moment 16 IKV Monet CLV South Jot, 66 KV atan 345 KV Manbua 345 KV Manbua 345 KV Mondam 138 AV Mondam 138 KV Soring Valley 138 KV Soring Valley 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Satsfer 115 KV Lap Root 138 KV Lap Root 138 KV	Thomas Tap 69 KV South Women 161 KV SUB 376 - Monet Chr. South 69 KV Monet Chr. South 69 KV Naehua 345 KV Naehua 151 KV Woodward District 138 KV Arcadia 138 KV Cushine 138 KV Soring Valley 138 KV Knite 138 KV Knite 138 KV Shistow 138 KV Havy 99 Tap 59 KV Fielcher 115 KV	
36 36 42	\$0236 11155 10585 10585 10585 10585 10545 50199 11000 10875 11129 11130 11132 11133 11134 11134 50215 50216 50216 50201 10100	876 537 537 538 703 30191 30192 757 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability engional reliability Bahanee Portfolio Bahanee Portfolio regional reliability regional reliability	Rebuils 0.9 mile Weathenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Replace Weathenford wavebrap. Build new 32 mile Substation 383 - Monett 51 kV line. Instal 3-windling transformer connecting new 161 kV line. The Substation 200 mile PAC Station preve 161 kV line. Build new 345 KV line Instantomer connecting new 161 kV line. The National 340 Volus In Handhorn - St. Joseph 345 KV line. Build new 345 KV line from latan to Nashua. Instal a swindling those in Handhorn - St. Joseph 345 KV line. Build new 345 KV line International Instal a National Instal a National National Association - St. Joseph 345 KV line from latan to Nashua. Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal 3 additional Marc cap al Thomas 115 KV for a lotal 8 Mvar Instal Instal Instantional Statis 12 KV audotanatomer. Convert 31 mile Marc - Lotanting 64 VI ine to 138 KV. Convert 3 mile Statis V audotanatomer. Convert 31 mile Marc - Lotanting 64 VI ine to 138 KV. Convert 31 mile Marc - Lotanting 64 VI ine to 138 KV. Convert 31 mile Marc - VI ment 058 KV line to 138 KV. Convert 31 mile Marc - VI ment 058 KV line to 138 KV. Convert 31 mile Marc - VI ment 058 KV line to 138 KV. Convert 31 mile Marc - VI ment 058 KV line to 138 KV. Convert 31 mile Marc - VI ment 058 KV line to 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 31 mile Marc - VI ment 058 KV line 138 KV. Convert 3	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$4,620,000 \$180,000 \$12,000,000 \$12,000,000 \$16,000,000 \$16,000,000 \$4,000,000 \$4,000,000	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/19 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         Statil 51 KV           Statil 58 J. Monett 16 11 KV         Monet Colv South Jolt 69 KV           South Monett 16 11 KV         Monet Colv South Jolt 69 KV           Statin ASE KV         Monett Colv South Jolt 69 KV           Statin ASE KV         Monett Colv South Jolt 69 KV           Statin ASE KV         Monett Colv South Jolt 69 KV           Windfam 138 KV         Actabla JSE KV           Actabla JSE KV         Statin VI           Statin V Later 138 KV         Statin VI           Cauching 138 KV         Couching 138 KV           Cauching 138 KV         Statiler VI           Storker 115 KV         Monett TS KV           JAL 138 KV         La Fload TS KV           Neenhard 13 15 KV         Monett TS KV           Anamito South Interchange 115 KV         Monett TS KV	Thomas Tap 69 KV South Women 161 KV SUB 375 - Monet C/h South 69 KV Monet City East 69 kV Nashua 345 KV Nashua 345 KV Woodward District 138 KV Woodward District 138 KV Cushine 138 KV Cushine 138 KV Krine 138 KV Krine 138 KV Krine 138 KV Hwy 99 Tap 59 KV Fielcher 115 KV Newhart 6 230 KV Parmes Sub 115 KV	
136 136 142	\$2236 11156 10685 10685 10685 10685 10685 50199 1000 10335 10345 50199 1000 1035 1132 1113 11132 11132 11152 11155	876 877 537 537 703 703 703 703 80191 30192 757 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability egional reliability Balance Portfolio Balance Portfolio Regional reliability regional reliability	Rebuild 0.9 mile Westhenford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR, Replace Westhenford wavetrap. Build new 9.2 mile Substation 383 - Monett 3 161 kV line. Install 3-winding transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconcludor 1.2 m with 338 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Tap Maximu 346 Vol sin Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tratall 3-winding to Vol sin Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-adolicital Marc cap J Finange 115 kV for a total 8 Mar Tratall 3-build Marc Cap J Fanneel 115 kV for a total 8 Mar Tratall 3-build Marc Cap J Fanneel 115 kV for a total 8 Mar Convert 1.0 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line 50 kV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to 138 kV. Convert 3.7 mile Staffing Cap KV line to	\$1,000,000 \$7,369,315 \$4,000,000 \$4,000,000 \$4,000,000 \$4,000,000 \$1,000,0000 \$1,000,0000 \$1,000,0000 \$1,000,0000 \$1,0000,0000	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	0601/19 0601/19 0601/19 0601/19 0601/19 0601/19 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15 0601/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 KV SUB 383 - Mometh 16 1KV SUB 383 - Mometh 16 1KV Monet CLV South Jot, 66 KV atan 345 KV Manbu 345 KV Manbu 345 KV Manbu 345 KV Mondam 138 KV Mondam 138 KV Mondam 138 KV Cushing 1	Thomas Tap 69 KV South Women 161 KV SUB 375 - Monet C/h South 69 KV Monet City East 69 KV Naetrua 365 KV Naetrua 161 KV Woodsard Dietrich 158 KV Cought 138 KV Sortha Visite 158 KV Methan 138 KV Bristow 138 KV Bristow 138 KV Bristow 138 KV Placther 115 KV Newhart 6 230 KV Parmes Sub 115 KV Lea Courty REC-Calme 69 KV	
36 36 42	\$6236           11166           10885           10885           10885           10885           10985           10985           10985           10985           10985           10985           10985           10985           10985           10997           1100           10876           11132           11133           11132           11133           11135           50216           50300           50301           50301           11057           11057           110676	876 837 537 538 703 703 703 20192 20192 20192 20192 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability engional reliability Bahanoe Portfolio Bahanoe Portfolio regional reliability regional reliability	Rebuils 0.9 mie Westherford - Thomas Tap 68 kV line from 40 ACSR with 795 ACSR. Resizee Westherford wavetrap. Buils new 9.2 mile Substation 333 - Monett 3 161 kV line. Instal 3-windig transformer connecting new 161 kV bus to Monett CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. Tay Namual Statistical Tay Name 10 and 10 bus 10 buset CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. Tay Namual Statistical Tay Name 10 buset CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. Tay Namual Statistical Tay Name 10 buset CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. Tay Namual Statistical Tay Name 10 buset CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. Tay Namual Statistical Tay Name 115 kV or a loss M Miker Instal Inter Analysis JAY:38 kV automator 115 kV or a loss M Miker Reconsultor 12 mile FPS, Satistic BV Woost O Blitter Line 5 1960 ASS2. Instal Dire Analysis JAY:38 kV automator Tay Name 115 kV or a loss M Miker Convert 1 mile Methan - Custing 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 kV line to 138 kV. Convert 3 mile Sorrig Valley - Methan 69 k	\$1,000,000 \$17,362,315 \$8,000,000 \$24,440,000 \$44,620,000 \$195,000 \$195,000 \$195,000 \$112,000,000 \$12,000,000 \$112,000,000 \$112,000,000 \$115,1156,400 \$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	06011/19 26011/19 26011/18 06011/18 06011/18 06011/18 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         SUB 303- Monet 16 KV           SuB 706 TE 16 KV         Monet Colv South Jd. 69 KV           Jain 736 KV         Sub 706 TE 16 KV           Manet Colv South Jd. 69 KV         Jain 736 KV           Manet TS KV         Windfam 138 KV           Accasta 35 KV         Sub 706 TE 15 KV           Windfam 138 KV         Accasta 35 KV           Stimwer 115 KV         Sub 706 TE 15 KV           Sub 707 Valler 138 KV         Couhing 138 KV           Cauching 138 KV         Cauching 138 KV           Cauching 138 KV         Substein 115 KV           Kress 115 KV         Manet 15 KV           Austrik XV         Manet 50 KV           Las Courty REC-Ansel 69 KV         Las Courty REC-Ansel 69 KV	Thomas Tap 69 KV South Women 161 KV SUB 375 - Monet C/h South 69 KV Monet City East 69 kV Nashua 345 KV Nashua 345 KV Woodward District 138 KV Woodward District 138 KV Cushine 138 KV Cushine 138 KV Spring Valey 138 KV Methan 130 KV Krite 138 KV Hwy 99 Tap 69 KV Fielcher 115 KV Newhart 6 230 KV Farmes Sub 115 KV Lea County REC-Gamp 69 KV	
136 136 142	\$2236 11156 10685 10685 10685 10685 10685 50198 50198 50198 50198 50198 50199 11000 11132 111057 11067 11062 1	876 877 537 703 703 703 757 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability regional reliability Balance Portfolio Balance Portfolio Regional reliability regional reliability	Retuid 0.9 mie Westhenford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR, Repiace Westhenford wavetrap. Build new 92 mile Substation 383 - Monett 3 16 kV line. Instal 3-winding transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconculor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconculor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reconculor 1.2 m with 384 ACSR. Transformer connecting 11 kV kr of a total 8 More Instal a wavet and mark cap 81 Finaley 11 kV kr of a total 8 More Instal a southout and cap 81 Finaley 11 kV kr of a total 8 More Instal 3 additional More cap al Finaley 11 kV kr of a total 8 More Instal a southout and cap 81 Finaley 11 kV kr of a total 8 More Instal 3 additional More cap 81 Finaley 11 kV kr of a total 8 More Instal 3 additional More cap 81 Finaley 11 kV kr of a total 8 More Instal 3 additional More cap 81 Finaley 81 kV line 10 k8 MV Convert 3 mile Storing Valley - More 98 kV line 10 138 kV. Convert 3 mile Storing Valley - More 98 kV line 10 138 kV. Convert 3 mile Storing Valley - More 98 kV line 10 138 kV. Convert 3 mile Storing Valley - More 98 kV line 10 138 kV. Tap existing Cushing - Britely 11 kV kr ota 01 38 kV. Convert 3 mile Storing Valley - More 98 kV line 10 138 kV. Tap existing Cushing - Britely 11 kV kV cushot Tap existing Cushing - Britely 11 kV kV cushot Reconculor Advert 20 kV kV kV kV kV kV kV kV kV Adv 20 kV kV kV kV kV kV kV kV kV kV Adv 20 kV kV kV kV kV kV kV Store 80 kV kV kV kV kV kV kV kV kV kV Store 80 kV kV Bill Cush KV kV Bill Cush KV	\$1,000,000 \$7,369,315 \$4,000,000 \$4,000,000 \$4,000,000 \$4,000,000 \$1,000,0000 \$1,000,0000 \$1,000,0000 \$1,000,0000 \$1,0000,0000	WR AEP Peole EDE EDE EDE EDE EDE EDE EDE EDE EDE ED	06/01/15 05/01/15 06/01/15 06/01/15	06011/19 06011/19 06011/19 06011/18 06011/18 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 KV SUB 383 - Moment 16 1KV SUB 383 - Moment 16 1KV Monet CLV South Jot, 66 KV atan 345 KV Manbu 345 KV Manbu 345 KV Manbu 345 KV Mondam 138 KV Mondam 138 KV Soring Valley 138 KV Soring Valley 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV La Root 138	Thomas Tap 69 KV South Women 161 KV Sub 375 - Monet Chr. South 59 KV Monet City East 69 KV Naetrua 355 KV Naetrua 161 KV Woodaard Dietrich 158 KV Accasila 158 KV Counting 158 KV Sorting Visite 158 KV Methan 138 KV String Visite 158 KV Methan 138 KV String Visite 158 KV Hwy 99 Tap 59 KV Fieldher 115 KV Newhart 5 230 KV Parmes Sub 115 KV Las County REC-Casine 69 KV Las County REC-Casine 69 KV Las County REC-Casine 69 KV	
336 336 336 342 342 	\$2236 11156 10585 10585 10585 10585 10585 10585 10585 10595 50199 10595 10595 10595 10595 10595 1130 1132 11342 1135	876 877 537 536 703 30192 757 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability elegional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuils 0.9 mie Westherford - Thomas Tap 68 kV line from 40 ACSR with 795 ACSR. Resizee Westherford wavetrap Buils new 9.2 mile Substation 333 - Monett 5 11 kV line. Instal 3-windlig Arandom Construction prev 161 kV bus to Monett CKy South 69 kV. Reconsultor 1.2 m with 335 ACSR. The National 2400 Son Hradmon - St. Joseph 345 kV line. Buils new 345 kV line from latan to Nashua. Trasa new 345151 kV transformer and reconstruction of the National Action and the Action of the National Actional Acti	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$4,620,000 \$180,000 \$4,200,000 \$12,000,000 \$12,000,000 \$12,000,000 \$11,066,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,260,000 \$13,166,400 \$13,260,000 \$13,160,000 \$13,160,000 \$13,166,0000\$}	WR           WR           AEP           AEP           E0E           GE           SPS<	05/01/15 05/01/15 05/01/15 05/01/15 05/01/15 05/01/15	06011/19 06011/19 06011/18 06011/18 06011/18 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15	NTC-Moolfv Timing NTC-Moolfv Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         Statile 353- Monett 16 KV           Statil Association 16 KV         Monet Colv South Job 69 KV           Jaion 326 KV         Statile 354 KV           Manet Colv South Job 69 KV         Jaion 326 KV           Jaion 326 KV         Statile 354 KV           Minder 115 KV         Pannet 115 KV           Vandami 33 KV         Actabla 326 KV           Martin 138 KV         Statile 138 KV           Stimwer 115 KV         Statile 138 KV           Canding 138 KV         Couning 138 KV           Canding 138 KV         Statile 158 KV           Marten 115 KV         Kress 115 KV           Jakinser 115 KV         Jakinser 3115 KV           Las Fload 115 KV         KV           Aurtill 50 KV         Las Courty REC-Annel 69 KV           Las Courty REC-Annel 69 KV         Las Courty REC-First 158 KV           New Extra 115 KV         Statile 158 KV           New The 115 KV         Statile 158 KV           New The 115 KV         Statile 158 KV           Statile 158 KV         Statile 158 KV <td>Thomas Tap 69 kV South Worket 161 kV SUB 375 - Montt CM South 69 kV Monet Cliny East 69 kV Namua 38 kV Wootsward District 138 kV Wootsward District 138 kV Wootsward District 138 kV Cushing 138 kV Cushing 138 kV Metan 138 kV Metan 138 kV Metan 138 kV Sering Valley 138 kV Metan 138 kV Fieldher 115 kV Fieldher 115 kV Newnarf 5 230 kV Fieldher 115 kV Lea County REC-Charty 69 kV Lea County REC Charty 69 kV Lea County REC Charty 60 kV Lea County REC Charty 60 kV</td> <td></td>	Thomas Tap 69 kV South Worket 161 kV SUB 375 - Montt CM South 69 kV Monet Cliny East 69 kV Namua 38 kV Wootsward District 138 kV Wootsward District 138 kV Wootsward District 138 kV Cushing 138 kV Cushing 138 kV Metan 138 kV Metan 138 kV Metan 138 kV Sering Valley 138 kV Metan 138 kV Fieldher 115 kV Fieldher 115 kV Newnarf 5 230 kV Fieldher 115 kV Lea County REC-Charty 69 kV Lea County REC Charty 69 kV Lea County REC Charty 60 kV Lea County REC Charty 60 kV	
336 336 336 342 342 	\$6236 11156 10855 10855 10855 10855 10855 10855 10855 10855 10855 10876 10765 10765 10776 11129 11133 11134 11134 11135 50215 50200 50200 10876 11297 1130 11139 11133 11134 11134 11134 11134 11134 11185 50215 50301 10807 10708 100	876 877 537 703 703 703 757 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability esponse reliability Balanced Portfolio Balanced Portfolio Balanced Portfolio regional reliability regional reliability	Rebuild 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR, Replace Westhenford wavetrap. Build new 92 mile Substation 383 - Monett 3 161 kV line. Instal a wind and substation rear 161 kV bus to Monett CIK South 59 kV. Reportudor 1.2 m with 384 ACSR. Try Nashua 345 Vol bis In Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Try Nashua 345 Vol bis In Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tristal a wind and war cap al Trinking 115 kV for a lotal 8 Mvar Instal new 345161 kV Inandomer at Nashua. Instal new 345161 kV Inandomer at Nashua. Instal New 345161 kV Inandomer at Nashua. Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index Acasia 345 NB XV audionationer in the North State 100 kV Mar Instal Index Acasia 345 NB XV audionationer in the North State 100 kV Mar Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Tap existing Cushing - Britskin 138 KV Inte lint new Greenwood Sub 69 KV Itansformer bus. Rebuild 11.1 miles Miles Acasia Cardinal Add 28 Miler Capador Al Kines 115 KV Concul Into new Greenwood Sub 69 KV Itansformer bus. Rebuild 11 Miles 11 SKV Data Add 28 Miler Capador Al Kines 115 KV Concul Into new Greenwood Sub 69 KV Itansformer bus. Rebuild 11 Miles 120 KV Interformer. Add 28 State 120 KV Interformer. Add 28 State 120 KV Interformer. Add 28 State 20 KV Interformer. Reconduct Amartio - Farmes 115 KV Cardinal 25 KV Interformer. Add 26 KV Interformer 120 KV Inter	\$1,000,000 \$17,362,315 \$8,000,000 \$24,440,000 \$44,620,000 \$195,000 \$195,000 \$195,000 \$112,000,000 \$12,000,000 \$112,000,000 \$112,000,000 \$115,1156,400 \$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,400\$1,1156,	WR           WR           AEP           AEP           E0E           GE           SPS<	06/01/15 05/01/15 06/01/15 06/01/15	06011/19 06011/19 06011/19 06011/18 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherfoor 56 kV         SUB 383 - Mometh 16 1KV           SUB 383 - Mometh 16 1KV         Momet CLV South 16 16 KV           Monet CLV South Jot, 66 KV         Jatan 345 kV           Manato JS 50 KV         Momet CLV South Jot, 66 KV           Jatan 345 KV         Momet CLV South Jot, 67 KV           Maneta CLV South Jot, 68 KV         Jatan 345 KV           Maneta 115 KV         Momet CLV South Jot, 67 KV           Marken J, 163 KV         South Jot, 78 KV           Sorring Valley 13 KV         Sorring Valley 13 KV           Cushing 138 kV         Cushing 138 kV           Cushing 138 kV         Cushing 138 kV           Cushing 138 kV         South View           Lindocrin 115 kV         Mometh JS KV           Lindocrin 115 kV         South JS KV           Ling Food 138 kV         South JS KV           Ling Courby REC-TPOI 16 kV         Ling Courby REC-TPOI 16 kV           Ling Courby REC-TPOI 15 kV         Souther 230 kV           Souther 230 kV         Souther 230 kV	Thomas Tap 69 KV South Women 161 KV Sub 375 - Monet Chr. South 69 KV Monet City East 69 KV Naehua 345 KV Naehua 161 KV Woodward Diletrich 138 KV Accadia 138 KV Soring Valler, 138 KV Mehan 138 KV Shislow 138 KV Shislow 138 KV Hevy 99 Tap 59 KV Farmes Sub 115 KV Lea County REC-Game 69 KV	
336 336 042 042	\$6236 11156 10855 10855 10855 10855 10855 10855 10855 10855 10855 10876 10765 10765 10776 11129 11133 11134 11134 11135 50215 50200 50200 10876 11297 1130 11139 11133 11134 11134 11134 11134 11134 11185 50215 50301 10807 10708 100	876 877 537 703 703 703 757 858 858 858 858 858 858 858	regional reliability regional reliability regional reliability esponse reliability Balanced Portfolio Balanced Portfolio Balanced Portfolio regional reliability regional reliability	Rebuild 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR, Replace Westhenford wavetrap. Build new 92 mile Substation 383 - Monett 3 161 kV line. Instal a wind and substation rear 161 kV bus to Monett CIK South 59 kV. Reportudor 1.2 m with 384 ACSR. Try Nashua 345 Vol bis In Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Try Nashua 345 Vol bis In Hadmon - St. Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tristal a wind and war cap al Trinking 115 kV for a lotal 8 Mvar Instal new 345161 kV Inandomer at Nashua. Instal new 345161 kV Inandomer at Nashua. Instal New 345161 kV Inandomer at Nashua. Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index 345 NA audionationer in the North State 100 kV Mar Instal Index Acasia 345 NB XV audionationer in the North State 100 kV Mar Instal Index Acasia 345 NB XV audionationer in the North State 100 kV Mar Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Convert 37 mile Spring Valley - Kneps 65 KV line to 138 KV. Tap existing Cushing - Britskin 138 KV Inte lint new Greenwood Sub 69 KV Itansformer bus. Rebuild 11.1 miles Miles Acasia Cardinal Add 28 Miler Capador Al Kines 115 KV Concul Into new Greenwood Sub 69 KV Itansformer bus. Rebuild 11 Miles 11 SKV Data Add 28 Miler Capador Al Kines 115 KV Concul Into new Greenwood Sub 69 KV Itansformer bus. Rebuild 11 Miles 120 KV Interformer. Add 28 State 120 KV Interformer. Add 28 State 120 KV Interformer. Add 28 State 20 KV Interformer. Reconduct Amartio - Farmes 115 KV Cardinal 25 KV Interformer. Add 26 KV Interformer 120 KV Inter	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$4,620,000 \$180,000 \$4,200,000 \$12,000,000 \$12,000,000 \$12,000,000 \$11,066,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,260,000 \$13,166,400 \$13,260,000 \$13,160,000 \$13,160,000 \$13,166,0000\$}	WR AEP AEP EDE EDE EDE EDE EDE EDE KCPL MDW MDW MDW MDW MDW MDW MDW MDW MDW MDW	05/01/15 05/01/15 05/01/15 05/01/15 05/01/15 05/01/15	06011/19 06011/19 06011/18 06011/18 06011/18 06011/18 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15 06011/15	NTC-Moolly Timing NTC-Moolly Timing	01/27/09 01/27/09 06/19/09 06/19/09	Wastherford 59 KV SUB 303 - Monet 15 KV SuB 303 - Monet 16 KV Monet CUS South Jot, 69 KV Manha 345 KV Granter 115 KV Paranet 115 KV Paranet 115 KV Websit 35 KV Metan 138 KV South 348 KV Metan 138 KV South 348 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Cushing 138 KV Souther 115 KV Hotoron 115 KV Souther 115 KV Hotoron 126 KV Souther 115 KV	Thomas Tap 69 KV South Worket 161 KV Sub 375- Montel CM South 59 KV Monet City 2ast 69 KV Nateriua 345 KV Wootevand District 135 KV Wootevand District 135 KV Cushina 138 KV Cushina 138 KV Cushina 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Fieldher 115 KV Fieldher 115 KV Neenart 6 200 KV Parmes Sub 115 KV Les County REF 63 KV Les County REF 63 KV Settley 115 KV	
336 336 042 042	\$6236 11156 10855 10855 10855 10855 10855 10855 10855 10855 10876 10976 1100 10976 11129 11133 11133 11133 11133 11135 50215 50300 10677 10651 10652 10656 10657 10656 10657 10656 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10756 10757 107	876 877 837 837 703 703 703 703 703 703 7057 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio Balanced Portfolio regional reliability regional reliability - no OATT	Rebuild 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR, Repiace Westhenford wavebrap. Build new 9.2 mile Substation 383 - Monett 5 11 kV line. Instal 3-winding transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting 11 KV for a lotal 8 Mvar Instal 3 additional Mvar cap at Finance 11 KV for a lotal 8 Mvar Instal 3 additional Mvar cap at Finance 11 KV for a lotal 8 Mvar Instal 1 much Acada 34 Sinal 8 Mvariation 10 KV and 10 KV and 10 KV ACK Monett 4 Im Munkan - South CIX MV Rock MVAR Instal 1 much Acada 34 Sinal KV additional former at W Commet 1 and Mvar cap at Finance 5 KV inte 10 KV at 10 KV ACK Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Store 1 KV by Control 11 KV by Commet 3 KV C	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$4,620,000 \$180,000 \$4,200,000 \$12,000,000 \$12,000,000 \$12,000,000 \$11,066,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,260,000 \$13,166,400 \$13,260,000 \$13,160,000 \$13,160,000 \$13,166,0000\$}	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE E	05/01/15 05/01/15 05/01/15 05/01/15 05/01/15 05/01/15	06011/16         06011/16           0601118         0601118           0601118         M           0601115         0601115	NTC-Modify Timing NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         SUB 383 - Moneth 16 11KV           SuB 783 - Moneth 16 11KV         Monet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 KV         Mannet 161 KV           Mannet 161 KV         Mannet 115 KV           Mannet 161 KV         Mannet 165 KV           Mannet 161 KV         Mannet 165 KV           Mannet 161 KV         Mannet 165 KV           Mannet 16	Thomas Tap 69 KV South Women 161 KV Sub 375 - Monet Chr. South 69 KV Monet City East 69 KV Naehua 345 KV Naehua 161 KV Woodward Diletrich 138 KV Accadia 138 KV Soring Valler, 138 KV Mehan 138 KV Shislow 138 KV Shislow 138 KV Hevy 99 Tap 59 KV Farmes Sub 115 KV Lea County REC-Game 69 KV	
336 336 042 042	\$6236 11156 10855 10855 10855 10855 10855 10855 10855 10855 10876 10976 1100 10976 11129 11133 11133 11133 11133 11135 50215 50300 10677 10651 10652 10656 10657 10656 10657 10656 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10657 10756 10757 107	876 877 837 837 703 703 703 703 703 703 7057 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability regional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuild 0.9 mie Westherford - Tromas Tap 69 kV line from 40 ACSR with 795 ACSR. Replace Westherford wavetrap. Build new 32 mile Substation 383 - Monett 3 11 kV line. Instal 3-windlig Austratorme: contenting new 161 kV bus to Monett CAN South 69 kV. Reconculor 1.2 m with 384 ACSR. Tap Assauta 3450 volis in Hadmon - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 volis in Hadmon - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 volis in Hadmon - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tap Assauta 3450 volis in Hadmon - 51 Joseph 345 kV line. Build new 345161 kV frantomer at Nashua Tap Assauta 3450 volis Miked ap 2 Aroling 115 kV for a 1680 kM metomotor 120 mile FP. Satisfic for Viceo 1018 kV. Convert 1 amile Mashar - Spanty 3149 KV line 1013 kV. Convert 1 amile Mashar - Spanty 3149 KV line 1013 kV. Convert 3 mile Spring Valley - Metan 59 kV line to 138 kV. Convert 3 mile Spring Valley - Metan 59 kV line to 138 kV. Convert 3 mile Spring Valley - Metan 59 kV line to 138 kV. Convert 30 mile Group Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Group Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Group Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Group Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Group Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Group - Walley 31 kV be 54 kV line to 138 kV. Convert 30 mile Spring Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Line Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Spring Valley - Kinege 54 kV line to 138 kV. Convert 30 mile Line Line XIII 1 kV kV line KV line. Mad 28 kW capacitor at Spring Valley - Kinege 64 kV line. Build new 57 kV satisformer. Add second Naverat 2011 15 kV kransformer. Add second Naverat 2011 15 kV k	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$24,444,000 \$4,000,000 \$195,000 \$195,000 \$195,000 \$100,000 \$100,000 \$1,000,000 \$1,000,0000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,0	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	Decontris           Decontris           Decontris           Decontris           M           M           Decontris	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherfoor 59 kV           SUB 339 - Moment 16 1KV           South Monett 16 1KV           Monett CUS South Jolt 68 KV           Jaton 348 KV           Manato 158 KV           Watherford State           Windfam 158 KV           Pannet 115 KV           Windfam 158 KV           State XV           Metan 158 KV           Scring Valley 138 kV           Scring 238 kV	Thomas Tap 69 KV South Worket 161 KV Sub 375- Montel CM South 59 KV Monet City 2ast 69 KV Nateriua 345 KV Wootevand District 135 KV Wootevand District 135 KV Cushina 138 KV Cushina 138 KV Cushina 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Fieldher 115 KV Fieldher 115 KV Neenart 6 200 KV Parmes Sub 115 KV Les County REF 63 KV Les County REF 63 KV Settley 115 KV	
336 336 042 042	\$6236           11156           10585           10585           10585           10585           10585           10585           10585           10585           10585           10585           10545           2019           11130           11131           11133           11133           11134           11135           50215           502015           502015           502016           11057           11057           11058           11051           11052           11075           11075           11075           11075           11075           11075           11075           10878           10878           10878           10878	876 877 537 703 30192 767 767 767 859 859 859 859 859 859 859 859	regional reliability regional reliability regional reliability regional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuils 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR. Repiace Westhenford wavebrap. Build new 92 mile Substation 383 - Monett 51 eV line. Instal 3-windling transformer connecting new 161 kV line. The Substation Volume 1 Markon 24 - Subset 24 kV line. Build new 345 kV line from latan to Nashua. Instal new 345161 kV transformer at Nashua. Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 115 kV for a total 8 Mvar Instal 3 additional Mixer cap at Rhinesy 6 MV inte 103 kV. Context 1 A mixe Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mixer Capat Rhinesy 6 MV inte 10 Nav MV Context 1 A mixer Mi	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$4,620,000 \$180,000 \$4,620,000 \$12,000,000 \$12,000,000 \$12,000,000 \$11,066,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,166,400 \$13,260,000 \$13,166,400 \$13,260,000 \$13,160,000 \$13,160,000 \$13,166,0000\$}	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	05/01/15 05/01/15 05/01/15 05/01/15 05/01/15 05/01/15	06011/10         06011/10           0601110         0601110           0601110         0601110           0601115         0601115	NTC-Moolfv Timing NTC-Moolfv Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherfoor 59 kV           SUB 339 - Moment 16 1KV           South Monett 16 1KV           Monett CUS South Jolt 68 KV           Jaton 348 KV           Manato 158 KV           Watherford State           Windfam 158 KV           Pannet 115 KV           Windfam 158 KV           State XV           Metan 158 KV           Scring Valley 138 kV           Scring 238 kV	Thomas Tap 69 KV South Worket 161 KV Sub 375- Montel CM South 59 KV Monet City 2ast 69 KV Nateriua 345 KV Wootevand District 135 KV Wootevand District 135 KV Cushina 138 KV Cushina 138 KV Cushina 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Fieldher 115 KV Fieldher 115 KV Neenart 6 200 KV Parmes Sub 115 KV Les County REF 63 KV Les County REF 63 KV Settley 115 KV	
036 035 042 042 	\$6236           11156           10685           10858           10858           10841           10845           10845           10845           50199           11129           11131           11132           11133           11134           11195           50101           50201           11000           1001           11052           50010           50001           10051           10052           11052           11052           11052           11052           11054           11055           11052           11052           11052           11052           11053           10054           100555           50193           50193	876 877 837 837 703 703 703 703 703 703 7057 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability regional reliability Balanced Portfolio Balanced Portfolio Balanced Portfolio regional reliability regional reliability - no OATT	Rebuild 0.9 mile Westhenford - Thomas Tap 59 kV line from 40 ACSR with 795 ACSR, Repiace Westhenford wavebrap. Build new 9.2 mile Substation 383 - Monett 5 11 kV line. Instal 3-winding transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting new 161 kV bus to Monett CIX South 69 kV. Reportudor 1.2 m with 384 ACSR. Transformer connecting 11 KV for a lotal 8 Mvar Instal 3 additional Mvar cap at Finance 11 KV for a lotal 8 Mvar Instal 3 additional Mvar cap at Finance 11 KV for a lotal 8 Mvar Instal 1 much Acada 34 Sinal 8 Mvariation 10 KV and 10 KV and 10 KV ACK Monett 4 Im Munkan - South CIX MV Rock MVAR Instal 1 much Acada 34 Sinal KV additional former at W Commet 1 and Mvar cap at Finance 5 KV inte 10 KV at 10 KV ACK Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Stormy Valley - Kneep 6 KV line to 138 KV. Commet 3 mile Store 1 KV by Control 11 KV by Commet 3 KV C	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$24,444,000 \$4,000,000 \$195,000 \$195,000 \$195,000 \$100,000 \$100,000 \$1,000,000 \$1,000,0000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,0	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	06011/10         06011/10           0601110         0601110           0601110         0601110           0601115         0601115	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09	Washerford 56 KV         SUB 383 - Moneth 16 11KV           SuB 783 - Moneth 16 11KV         Monet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 68 KV         Mannet CLV South 161 68 KV           Mannet CLV South 161 KV         Mannet 161 KV           Mannet 161 KV         Mannet 115 KV           Mannet 161 KV         Mannet 165 KV           Mannet 161 KV         Mannet 165 KV           Mannet 161 KV         Mannet 165 KV           Mannet 16	Thomas Tap 69 KV South Worket 161 KV Sub 375- Montel CM South 59 KV Monet City 2ast 69 KV Nateriua 345 KV Wootevand District 135 KV Wootevand District 135 KV Wootevand Stat V Cushina 138 KV Cushina 138 KV Cushina 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Fieldher 115 KV Neenart 6 200 KV Parmes Sub 115 KV Les County REF 63 KV Les County REF 63 KV Les County REF 63 KV Settley 115 KV	
036 036 042 042	\$6236           11156           10858           10858           10858           10858           10841           10845           10845           50199           11129           11131           11132           11133           11134           11195           50101           50201           11000           1001           11057           11061           10058           11061           10052           11052           11052           11052           11052           11054           11055           11052           11052           11052           11052           11053           10054           100555           50193           50193	876 837 537 537 703 30192 757 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability egional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuild 0.9 mie Westherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR, Replace Westherford wavetrap. Build new 32 mile Substation 383 - Monett 3 161 kV line. Instal 3-windling transformer connecting new 161 kV bus to Monett CN South 69 kV. Reconcludor 1.2 m with 384 ACSR. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathomer at Nashua. Taga 3 additional Mark cap al Zhange 115 kV for a tata 8 Mar Taga 3 additional Mark cap al Zhange 115 kV for a tata 8 Mar Taga 345 Joseph 347 SK Additionatorismer. Convert 1.4 mile Mehan - Capiting 69 kV line to 138 kV. Convert 3.7 mile 59 kV line 10 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line 100 kW. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line. Convert 3.7 mile 50 kV constormer. Add second Nashut 2001 15 kV cansformer. Add second Nashut 2001 15 kV cansformer. Add second Nashut 2001 15 kV cansformer. Add second Sathom 40 med 440 kV line 56 kV line. Build new 3 mile Lae County 74 molet. Convert 3 mile Lae County 74 molet. Convert 3 mile Lae County 74 molet. Convert 3 mile Lae County Andreft.	\$1,000,000 \$7,368,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$24,444,000 \$185,000 \$185,000 \$185,000 \$185,000 \$185,000 \$1,000,0000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$\$1,000,000\$\$1,000,000\$\$1,000,000\$\$1,0000\$\$1,0000\$000\$0	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	06011/10         06011/10           0601110         0601110           0601110         0601110           0601115         0601115	NTC-Moolly Timing NTC-Moolly Timing	01/27/09 01/27/09 06/19/09 06/19/09	Weatherford 56 kV/           SUB 335 - Moment 16 1KV           South Monett 16 1KV           Monett CLV South Jot, 68 kV           Jaton 345 kV           Manator JS SKV           Nashua 345 kV           Kinsley 115 kV           Pannee 115 kV           Pannee 115 kV           South Monett 15 kV           South Monett 15 kV           South Valley 138 kV           Soring Valley 138 kV           Cushing 138 kV           Cushing 138 kV           Southort 15 kV           South Valley 138 kV           Southort 15 kV           Substant 15 kV           Southort 15 kV           South Interchange 115 kV           Southort 15 kV           South Interchange 115 kV           Southort 15 kV           Southort 25 kV           Could South Interchange 115 kV           Las Courty REC-TPSI 69 kV           Southort 250 kV           Hootes 250 kV           Hootes 250 kV           Abs 26 kV           Abs 26 kV           Abs 26 kV           Abs	Thomas Tap 69 KV South Womet 161 KV Sub 375. Monet CM south 59 KV Monet City East 69 KV Naenua 365 KV Woosaant Dietici 138 KV Woosaant Dietici 138 KV Cushino 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Metan 138 KV Metan 138 KV Soring Valley 158 KV Metan 138 KV Soliter 115 KV	
1036 1036 1042	\$6236           11156           10585           10585           10585           10585           10585           10585           10585           10585           10585           10585           10542           50769           11130           11131           11133           11134           11135           50216           50300           502301           502311           11050           11057           11056           11057           11058           11058           10585           10585           10585           10585           10585           10585           10585           50189           50189           50189           50189           50189           50189           50189           50189           50189           50189           50189           50189           50189	876 877 537 703 30192 767 767 767 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability balance Partfolio Balance Partfolio Balance Partfolio Balance Partfolio Balance Partfolio Balance Partfolio Regional reliability regional reliability	Rebuils 0.9 mie Westherford - Thomas Tap 68 kV line from 40 ACSR with 795 ACSR. Resizee Westherford wavetrap. Buils new 9.2 mile Substation 333 - Monett 5 11 kV line. Instal - swindlig transformer connecting new 161 kV bus to Monett CKy South 69 kV. Reconsultor 1.2 m with 336 ACSR. The National School Sch	\$1,000,000 \$7,369,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$257,000 \$24,444,000 \$4,000,000 \$195,000 \$195,000 \$195,000 \$100,000 \$100,000 \$1,000,000 \$1,000,0000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,0	WR Year 2012 AEP EDE EDE EDE EDE EDE EDE EDE E	06/01/15 00/01/15 00/010	0501/19         0501/19           0501/19         0501/19           0501/18         M           0501/18         0501/18           0501/18         0501/15           0501/15         050	NTC-Modify Timing	01/27/09 01/27/09 06/19/09 06/19/09 06/19/09	Washerdoo 55 kV SUB 353 - Moneti 16 11KV SUB 353 - Moneti 16 11KV Monet CoV South Jot, 65 kV Jotan 326 kV Mana 325 kV Mana 326 kV	Thomas Tap 69 kV South Worket 161 kV Sub 375- Monat Chr South 69 kV Monet Chr Sast 69 kV Namua 38 kV Wootsant District 138 kV Wootsant District 138 kV Wootsant District 138 kV Cushing 138 kV Cushing 138 kV Metan 138 kV Metan 138 kV Metan 138 kV Bristow 138 kV Heve 95 ta 59 kV Fieldher 115 kV Newhart 6 230 kV Fieldher 115 kV Lea County REC-Camp 69 kV Lea County REC-Camp 60 kV Lea County REC 60 kV Rec 60 kV Rec 60 k	
036 042 042 042 042 004 004 004	\$6236           11156           10858           10858           10858           10858           10841           10845           10845           50199           11129           11131           11132           11133           11134           11195           50101           50201           11000           1001           11057           11061           10058           11061           10052           11052           11052           11052           11052           11054           11055           11052           11052           11052           11052           11053           10054           100555           50193           50193	876 837 537 537 703 30192 757 670 858 858 858 858 858 858 858 85	regional reliability regional reliability regional reliability egional reliability Balance Portfolio Balance Portfolio Balance Portfolio regional reliability regional reliability	Rebuild 0.9 mie Westherford - Thomas Tap 69 kV line from 40 ACSR with 795 ACSR, Replace Westherford wavetrap. Build new 32 mile Substation 383 - Monett 3 161 kV line. Instal 3-windling transformer connecting new 161 kV bus to Monett CN South 69 kV. Reconcludor 1.2 m with 384 ACSR. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathom - 51 Joseph 345 kV line. Build new 345 kV line from latan to Nashua. Tay Assuba 345 Vol sin H kathomer at Nashua. Taga 3 additional Mark cap al Zhange 115 kV for a tata 8 Mar Taga 3 additional Mark cap al Zhange 115 kV for a tata 8 Mar Taga 345 Joseph 347 SK Additionatorismer. Convert 1.4 mile Mehan - Capiting 69 kV line to 138 kV. Convert 3.7 mile 59 kV line 10 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line 100 kW. Convert 3.7 mile 50 mV 348 v K line 50 kV line to 138 kV. Convert 3.7 mile 50 mV 348 v K line 50 kV line. Convert 3.7 mile 50 kV constormer. Add second Nashut 2001 15 kV cansformer. Add second Nashut 2001 15 kV cansformer. Add second Nashut 2001 15 kV cansformer. Add second Sathom 40 med 440 kV line 56 kV line. Build new 3 mile Lae County 74 molet. Convert 3 mile Lae County 74 molet. Convert 3 mile Lae County 74 molet. Convert 3 mile Lae County Andreft.	\$1,000,000 \$7,368,319 \$8,000,000 \$275,000 \$275,000 \$275,000 \$24,444,000 \$185,000 \$185,000 \$185,000 \$185,000 \$185,000 \$1,000,0000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$ \$1,000,000\$\$1,000,000\$\$1,000,000\$\$1,000,000\$\$1,0000\$\$1,0000\$000\$0	WR Year 2019 AEP EDE EDE EDE EDE EDE EDE EDE EDE EDE E	06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15 06/01/15	2601/19 2601/19 2601/19 2601/18 M M M 2601/18 2601/15	NTC-Moolfy Timing NTC-Moolfy Timing	01/27/09 01/27/09 06/19/09 06/19/09 06/19/09	Weatherford 56 kV/           SUB 335 - Moment 16 1KV           South Monett 16 1KV           Monett CLV South Jot, 68 kV           Jaton 345 kV           Manator JS SKV           Nashua 345 kV           Kinsley 115 kV           Pannee 115 kV           Pannee 115 kV           South Monett 15 kV           South Monett 15 kV           South Valley 138 kV           Soring Valley 138 kV           Cushing 138 kV           Cushing 138 kV           Southort 15 kV           South Valley 138 kV           Southort 15 kV           Substant 15 kV           Southort 15 kV           South Interchange 115 kV           Southort 15 kV           South Interchange 115 kV           Southort 15 kV           Southort 25 kV           Could South Interchange 115 kV           Las Courty REC-TPSI 69 kV           Southort 250 kV           Hootes 250 kV           Hootes 250 kV           Abs 26 kV           Abs 26 kV           Abs 26 kV           Abs	Thomas Tap 69 KV South Womet 161 KV Sub 375. Monet CM south 59 KV Monet City East 69 KV Naenua 365 KV Woosaant Dietici 138 KV Woosaant Dietici 138 KV Cushino 138 KV Soring Valley 138 KV Metan 138 KV Soring Valley 138 KV Metan 138 KV Metan 138 KV Metan 138 KV Soring Valley 158 KV Metan 138 KV Soliter 115 KV	

Int         Int         Process         Proces					SPP Boad of Directors Approved Appendix A projects January 26, 2010										
Jose         Loss         Loss <thloss< th="">         Loss         Loss         <thl< th=""><th></th><th></th><th></th><th></th><th>relay settings &amp; Rock Hill Jumpers. Upgrade switches, CT ratios, and relay settings at Rock Hill and Carthage. Remove switches in middle of line.</th><th></th><th></th><th></th><th>06/01/16</th><th></th><th></th><th></th><th>-</th><th>1</th></thl<></thloss<>					relay settings & Rock Hill Jumpers. Upgrade switches, CT ratios, and relay settings at Rock Hill and Carthage. Remove switches in middle of line.				06/01/16				-	1	
Sec.     Sign of Sig					Install new 345/161 kV transformer at Osage Creek			05/01/16	M		02/13/08	Osage 345 kV		1	
H     H <td>20000</td> <td>10659</td> <td>511</td> <td></td> <td>Install 9 miles of 345 kV line from Safe Roars to Clean Creak</td> <td>\$24,500,000</td> <td>AEP</td> <td>06/01/16</td> <td>M</td> <td></td> <td></td> <td>Shipe Road 345 kV</td> <td>E Rogers 345 kV</td> <td>1</td>	20000	10659	511		Install 9 miles of 345 kV line from Safe Roars to Clean Creak	\$24,500,000	AEP	06/01/16	M			Shipe Road 345 kV	E Rogers 345 kV	1	
No.     No. <td>20000</td> <td>10898</td> <td></td> <td>regional reliability</td> <td>Rebuild 2 miles of 256 ACSR with 755 ACSR and replace Fern Street Switches</td> <td>\$2,000,000</td> <td>AEP</td> <td>00/01/10</td> <td>06/01/16</td> <td></td> <td>02/13/00</td> <td>Broadmoor 69 kV</td> <td>Fern Street 69 KV</td> <td>1</td>	20000	10898		regional reliability	Rebuild 2 miles of 256 ACSR with 755 ACSR and replace Fern Street Switches	\$2,000,000	AEP	00/01/10	06/01/16		02/13/00	Broadmoor 69 kV	Fern Street 69 KV	1	
Image: Constraint of the second sec		10848			Convert 27 ml of 34.5 kV to 69 kV in the Baxter Springs area	\$12,375,000	EDE	05/01/16							
Image: Problem of the second					Replace Wavetrap	\$150,000						Blue Spring South 161 kV		1	
Image: Problem of the second		10698	549		Reconductor 69 kV Line to 1272 ACSR and replace 600A switch with 1200A switch.				06/01/16				Pryor Foundry South 69 KV	1	
Constrained         Constrained <thconstrained< th=""> <thconstrained< th=""></thconstrained<></thconstrained<>			550	regional reliability	Reconductor 69 kV Line to 1272 ACSR and replace 600A switch with 1200A switch.	\$370,530		05/01/16	06/01/16			Maid 69 KV	Redden 69 kV	1	
JAMEANDAND AND ANDAND AND AND AND AND AND AND AND AND AND				zonal - sponsored	Add one 9 Myar cap at have date	\$1,000,000		05/01/16	06/01/16			Battle Creek 69 kV			
C         C	20002			regional reliability	Increase rating of HSL East kV to HSL West 69 kV line to 143 MVA. Planned by OGE In 2008.	\$250,000	OGE	05/01/16			02/13/08	HSLEast 69 kV	HSLWest 69 kV	1	
		10899	682	regional reliability		\$5,300,000	OGE		06/01/16			Little River 69 kV	Maud 69 kV	1	
Image: Process of the section of t	L	50302				\$583,200		05/04/45					Conversion Contraction		
					add new 59 kV Ckt Georgia-Lawrence pk pipe type cable CkT 2	\$5,166,960								2	
Image: Processing of the interview			844	regional reliability	Upgrade 9.9 miles of 69 kV between Mustang to Sunshine Canvon from 4/0 to 795; new rating 91/114	\$3,341,000	WEEC	06/01/16	06/01/16					1	
No.         No. <td></td> <td>11117</td> <td>847</td> <td>regional reliability</td> <td>Upgrade Wakita to Nash, 1/0 to 336.4 ACSR</td> <td>\$6,705,000</td> <td>WFEC</td> <td></td> <td>06/01/16</td> <td></td> <td></td> <td>Nash 59 KV</td> <td>Wakita 69 kV</td> <td>1</td>		11117	847	regional reliability	Upgrade Wakita to Nash, 1/0 to 336.4 ACSR	\$6,705,000	WFEC		06/01/16			Nash 59 KV	Wakita 69 kV	1	
No. 100No. 100No. 100 No. 1		10865	659		Convert 11 mile Reeding - Cashion 69 kV line to 138 kV.	\$3,712,500	WFEC	06/01/16						1	
Image: Constraint of the second sec		10869	663	regional reliability	Tear down and rebuild TEC - Hook Jct County Line 115 kV.	\$641,250	WR		06/01/16			Tecumseh Energy Center 115 kV	Hook Jct 115 KV	1	
							Year 2017	7						1	
					Install 12 Mvar cap bank at Bloomburg 69 kV.	\$500,000	AEP		06/01/17			Bloomburg 69 kV			
					Report of a second seco		AEP		06/01/17					1	
			878		reconductor 2.00 miles or 477 AGSR 69 KV line with 1272 AGSR and raise CT rate and relay seconds. Rebuild 4.7 mile Brown Lee, North Market 69 KV line of 2,203 ACSR 2,656 ACSR with 1272 ACSR 2 raise CT rate 2 miles contractioner.	\$2,700,000	AEP		06/01/17			North Mirleola 69 KV Brown Lee 59 KV		1	
LINE         Constrained		10547	502	regional reliability	Reconductor 3.25 miles Northwest Henderson-Poynter 69 kV line with 1272 ACSR.	\$3,220,000	AEP						Povnter 69 kV	1	
	20036	10571	440	regional reliability		\$2,274,000	EDE		06/01/17	NTC-Modify Timing	01/27/09	SUB 131 - Diamond Junction 69 kV	SUB 362 - Sarcoxle Southwest 69 kV	1	
		10891	677	regional reliability	Tear down the Riverton to Joplin 59 69 kV line, rebuilding the line to 161 kV from Stateline to outside Joplin 59 sub. Tear down and		EDE	05/01/17	06/01/18			SUB 439 - Stateline 161 kV	Jopin 59 161 kV	1	
		10892	677		rebuild Jopin 59 to Gateway to Plisbury to Reinmiller, converting those 69 kV lines to 161 kV. Tap the 161 kV line between Jopin 59	\$25,000,000	EDE	05/01/17	06/01/18					1	
LOD         GR0         Rest         R		10893	677		and Gateway at Joplin 422.		EDE	05/01/17	06/01/18			Pilsbury 161 kV	Reinmiler 161 kV	1	
Open         Open <th< td=""><td>20036</td><td>10259</td><td>203</td><td>regional reliability</td><td>Reconductor 3.5 mile Atlas Jot Carthage Northwest 69 kV line from 4/0 ACSR to 336 ACSR for 65 MVA Rate B.</td><td>\$1,277,935</td><td>EDE</td><td>and the second s</td><td>06/01/17</td><td>NTC-Modify Timing</td><td>01/27/09</td><td>SUB 109 - Atlas Junction 69 kV</td><td>SUB 108 - Carthage Northwest 69 kV</td><td>1</td></th<>	20036	10259	203	regional reliability	Reconductor 3.5 mile Atlas Jot Carthage Northwest 69 kV line from 4/0 ACSR to 336 ACSR for 65 MVA Rate B.	\$1,277,935	EDE	and the second s	06/01/17	NTC-Modify Timing	01/27/09	SUB 109 - Atlas Junction 69 kV	SUB 108 - Carthage Northwest 69 kV	1	
Solie         Solie <th< td=""><td></td><td>10716</td><td></td><td>regional reliability</td><td>Reconcluctor with 795ACSR.</td><td></td><td>GMO</td><td>05/01/17</td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		10716		regional reliability	Reconcluctor with 795ACSR.		GMO	05/01/17							
Bit Montest State		10904	687	regional reliability	Replace wavetraps at Longview and Western Electric		GMO					Longview 161 kV	Western Electric 161 kV	1	
	20017	50214			To Mval TTS KV CAP BANK AT CO2AD Convert E. Smith 151 kV in 1/2 breaker design and instal 3rd 500-151 kV transformer bank	\$1,000,000		05/01/17	06/01/17 M		01/16/09		East Smith 151 kV		
	20017	50172	30160		Convert 1, child for KV to 1112 breaker design and instancia 300-101 KV transformer bank.	\$100,000	OGE	05/01/17						5	
1110         8.10         model assists         Provide assists         P					Build new 100 mile 345 kV line from OGE Anadarko to Oklahoma/Texas border towards SPS's Reactor station on Woodward-Tuco									1	
End         State         Importantion         Intel S M registering         Intel S M registering         Name 20 M           4         1000         N1         Importantion         1000         N1         Name 20 M         State Sta															
C         COM         State         Impact addity         Impact				regional reliability		\$146,000	OPPD					SUB 907 69 KV	SUB 911 69 KV	1	
Image: Process of the spectra reading of the		50220	30216	regional reliability	Instal 50 Mvar capactor bank at Wheeler min. 2 Blocks 25Mvar	\$4,050,000	SPS							_	
1109         100         region statisty         Number (2) https://statisty         Numer (2) https://statisty         Numer (2) htt	L	50303	30266		Instal adottorial BLOCK 14.4 Mvar Beandulater 7.28 miles with 70% kernil conductor	\$583,200	SPS	06/01/17				Balley Co 69 KV Chaves Couply Interchance 115 KV	Convon Pub 115 kV	1	
1109         107         regist ansatz         Built on the State Wire for 1925 Made Latter for Name 2 values 0 State		11005	762	regional reliability	Reconcluctor 3.70 miles with 795 kcmi conductor.	\$3.375.000	SPS	05/01/17	06/01/17			Chaves County Interchange 115 kV		1	
Integra         Abol         regrass relation         Database         Database         Database         Description         Description <th descrip<="" td=""><td></td><td></td><td></td><td></td><td>Build new 10 mile 345 kV line from SPS's Reactor station on Woodward-Tuco 345 kV line to Oklahoma/Texas border towards OGE</td><td>515 405 000</td><td></td><td>05/01/17</td><td></td><td></td><td></td><td></td><td></td><td>1</td></th>	<td></td> <td></td> <td></td> <td></td> <td>Build new 10 mile 345 kV line from SPS's Reactor station on Woodward-Tuco 345 kV line to Oklahoma/Texas border towards OGE</td> <td>515 405 000</td> <td></td> <td>05/01/17</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td>					Build new 10 mile 345 kV line from SPS's Reactor station on Woodward-Tuco 345 kV line to Oklahoma/Texas border towards OGE	515 405 000		05/01/17						1
1006         753         melocal respont         Additional 105 W transform of Gay Comp Machanne         E. B. 8000         260         600/17         600/17         Comp To Mark Machanne 6 W           1106         754         Respont respont         2000         553         600/17         Comp To Mark Machanne 6 W           1106         5544         Strike         Strike <td></td> <td>'</td>														'	
Integr         686         medic matching         Control         926         926         926         926         927         927         928					Bulld new 115 mile 345 kV line from Potter to Stateline.									1	
11:00         633         response relation         No. 200 spectrame 11:50 × 100					Add second 115/09 KV transformer at Gray County Substation.	\$1,890,000	SPS	05/01/17				Gray County Interchange 115 kV	Gray County Interchange 69 kV	2	
1130         95         model relation         Model and a field and base for model.         94-20         95-00         WFEC         95-00         MEC         95-00 <th< td=""><td></td><td></td><td>835</td><td></td><td></td><td>2812500</td><td>SPS</td><td>05/01/17</td><td></td><td></td><td></td><td></td><td></td><td>1 2</td></th<>			835			2812500	SPS	05/01/17						1 2	
1130         95         model relation         Model and a field and base for model.         94-20         95-00         WFEC         95-00         MEC         95-00 <th< td=""><td></td><td>50146</td><td>30140</td><td>regional reliability - non OATT</td><td>Add 2nd transformer i totes ky dwse Mick CKT 2</td><td>\$145,800</td><td>SWPA</td><td>05/01/17</td><td>06/01/17</td><td></td><td></td><td>China 69 kV</td><td>NE REEDID OF KV</td><td></td></th<>		50146	30140	regional reliability - non OATT	Add 2nd transformer i totes ky dwse Mick CKT 2	\$145,800	SWPA	05/01/17	06/01/17			China 69 kV	NE REEDID OF KV		
106         7.8         region relation         7.1         Learning for the database 20 V in one Basked Creek doubling in the Baskedow doubling in the Baskedow doubling in the Basked Creek		11205	909		Reconductor 4.0 miles with 556 kcmil conductor.	\$2,250,000	WFEC		06/01/17			Oklahoma University SW 69 kV	Cole 69 KV	1	
Image: Note of the state is the region related in the related in the related in the state is the related in the state is the related in th		10867	661		Tear down and rebuild 2.52-mile County Line-Hook Jot 115 kV line, 1192 ACSR.	\$1,063,125			06/01/17			Hook JCT 115 KV	County Line 3 115 KV	1	
Strike         Strike<		10998	756	regional reliability	Tap Lawrence Hill-Swissvale 230 kV line near Baldwin Creek substation and install Baldwin Creek 230/115 kV transformer	\$6,930,000			06/01/17			Baldwin Creek 230 kV	Baldwin Creek 115 kV	1	
15515         472         regions relationly project an electronic bit of the properties of the properties with one bit of the 24 M United contracts of the 24 M United contrest of the 24 M United contracts of the 24 M United contrest of								8							
15515         472         regions relationly project an electronic bit of the properties of the properties with one bit of the 24 M United contracts of the 24 M United contrest of the 24 M United contracts of the 24 M United contrest of		50193	30184	regional reliability	Install 6 Mvar capacitor for a total of 12 Mvar at South Nashville.	\$600,000	AEP		06/01/18			South Nashville 138 kV	Kasiahis BEO (20 hV		
10854         509         region relaxity         Constribution 50600 Centration 514 V Juliano 1016-125 V Juliano 1016 V Juliano 1016-125 V Juliano 1016-125 V Juliano 1016-		10615		regional reliability	Rebuild 12/co in or the debriga Pacific/Rebuild Factory 135 Active with 12/2 Active 12/2 A		AFD		06/01/18					1	
Noci-         Location         Location         Location         ADV         Docume         Docume <thdocume< th=""> <thdocume< th=""> <thdocum< t<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>o o o o o o o o o o o o o o o o o o o</td><td></td></thdocum<></thdocume<></thdocume<>													o o o o o o o o o o o o o o o o o o o		
E         60136         1980/200         CUS         0.60118         0.60118         Thin Case Servic           11076         6114         2001-sponsed         Rebuil James Rev 69 V         South Highway 65 69 V           11077         615         2001-sponsed         Rebuil James Rev 69 V         South Highway 65 69 V           11077         615         2001-sponsed         Rebuil James Rev 69 V         South Highway 65 69 V           11077         615         2001-sponsed         Rebuil James Rev 69 V         South Highway 65 69 V           11078         616         regional relability         Rebuil James Rev 69 V         South Highway 65 69 V           11076         617         regional relability         Rebuil James Rev 69 V         CP           11087         618         Rebuil James Rev 69 V         CP         CP           11097         619         regional relability         Add Tames Rev 69 V         CP           11097         600         regional relability         Add Tames Rev 69 V         CP         CP           11097         635         regional relability         Add Tames Rev 69 V         CP         CP <t< td=""><td></td><td>10654</td><td>509</td><td>regional reliability</td><td>the 506929 East Centerton to 506960 Bentonville Hwy 279 161 kV line 2.0 miles west of 506929 East Centerton station.</td><td>\$2,904,000</td><td>AEP</td><td></td><td>06/01/18</td><td></td><td></td><td>Centerton 161 kV</td><td></td><td>1</td></t<>		10654	509	regional reliability	the 506929 East Centerton to 506960 Bentonville Hwy 279 161 kV line 2.0 miles west of 506929 East Centerton station.	\$2,904,000	AEP		06/01/18			Centerton 161 kV		1	
11076         614         2004-sportsee         Retuits 3,ams Rive to Sub Highway 65 eV         Sub-Highway 65 eV         Sub-Highway 65 eV           11077         615         2004-sportsee         Retuits 3,ams Rive to Sub-Highway 65 eV		50136	30130	regional reliability	Install 30 MVAR capacitor at Twin Oaks Substation	\$750,000	CUS	05/01/18	06/01/18			Twin Oaks 69 kV		-	
10005         668         reduct relative         Replace Coresa 1516/W transformer with even to 100110M/A         \$12,000         GMO         660118         Doess 151V         Opesa 68V           11005         660         regional relability         Upsace the 600 are Core         \$12,000         GMO         650118         Phone Pauding South 68 VV         Permetakana 56 VV           11105         860         regional relability         Values the 600 are Core         \$12,000         OPE         650118         Phone Pauding South 68 VV         Permetakana 56 VV           11105         860         regional relability         Add S or additional transformer at 1000 2000 are 12000 are 120000 are					Rebuild James River to South Highway 69 kV	\$1,282,500	CUS						South Highway 65 69 kV	1	
11102         850         regions reliability         Upcare the 800 any C1 in Pern Stude to 100 any         \$25,000         CPE         0.601/15         Kenbucky Tap 68 kV         Pernsyntant 68 kV           11065         654         regions reliability         Ad3 of transformer at UCO 2001/15 20 MAX CkT 3         \$1,800,000         SPS         0.601/15         Tool infrendange 23 kV         Jones Inferdange 68 kV           11124         655         regions reliability         Ad3 or transformer at UCO 2001/15 20 MAX CkT 1         SPS         0.601/18         Doubers Inferdange 13 kV         Jones 345 kV					Rebuild South Highway to Sunset 69 kV	\$641,250		05/01/18					South Highway 65 69 kV	1	
11120         850         regions relability         Upgrave the 800 amp C1 in Pern Stub is 1200 and 11065         650 in 15         Kentucky Tap 68 kV         Pernsyntant 68 kV           11065         650         regions relability         Add ord transformer at UCO 200115 200 MA CkT 3         51,800,000         SPS         6601118         Tool infrendange 230 W         Upgrave the 800 amp C1 in Perns August 15 KV         Bowers inferdnange 68 V/           11124         554         regions relability         Add ord transformer 41 Duc 200 and Nones X12 Sta KV         Space Sta KV		10905			replace Coessa to voeky transformer with new 100/110MVA	\$2,000,000	GMO		06/01/18				CDP Transformer #2.60 kV	1	
11066         604         regions relability         Add 3d transformer at DUCC 201/15 26 W CMT 2         \$13,000,000         SPS         660/118         Tuco Intercharge 23 W         Tuco Intercharge 115 W           11167         856         regions relability         Add 7d transformer at Duces 20 W SP         660/118         Bowes Intercharge 23 W         Jones 525 W           11124         854         regions relability         Add 7d transformer 20 W SP         Jones 525 W         Jones 525 W         Jones 525 W           11125         854         regions relability         Add 7d transformer 20 W SP         Jones 525 W         Jones 525 W         Jones 525 W           11112         854         regions relability         Add 7d transformer 20 W SP         Jones 525 W         Jones 525 W         Jones 525 W           11112         854         regions relability         Add 7d transformer 20 W SP         Jones 525 W         Jones 525					Upprade the 800 amp CT in Penn Sub to 1200 amp		OGE	+				Kentucky Tap 69 kV	Pennsylvania 69 kV	1	
11067         605         redional reliability         Add and transformer at Bowers 11568 /V CT 2         51.86 upon         5PS         0.601/18         Discrets Interchange 15 KV         Sovers Interchange 66 KV           11124         654         redional reliability         Add new 35-230 KV S98 MA CKT 1         Sovers Interchange 66 KV         Sovers Interchange 66 KV           11125         654         redional reliability         Add new 35-230 KV S98 MA CKT 1         Sovers Interchange 66 KV         Sovers Interchange 66 KV           11112         854         redional reliability         Add new 35-230 KV S98 MA CKT 1         Sovers Interchange 66 KV         Sovers Interchange 66 KV           11112         854         redional reliability         Add new 35-230 KV S98 MA CKT 1         Sovers Interchange 66 KV         Lamb Co C115 KV         Lamb Co C115 KV         Lamb Co C115 KV         Lamb Co C115 KV         Edge 15 KV           11174         864         regional reliability - non CATT         Reliable Poals Buf Total transformer Cath Ecasting 10 Mar         \$432,000         SVRA         D601/18         Cath Sec V		11066		regional reliability	Add 3rd transformer at TUCO 230/115 250 MVA CKT 3	\$13,500.000	SPS					Tuco Interchange 230 kV	Tuco Interchange 115 KV	3	
11124         654         regions relability         Add new 35 kV line Tubo - Jones Ckt 12 St failes         533,857,800         SPS         6601/18         E001/18         Tubo 35 kV         Jones 35 kV           11125         554         regions relability         Add new 352,80V         SPS         6601/18         6001/18         Jones 35 kV         Jones 35 kV         Jones 35 kV         Jones 35 kV         Jones 32		11067	805	regional reliability	Add 2nd transformer at Bowers 115/69 kV CKT 2	\$1,890,000	SPS		06/01/18			Bowers Interchange 115 kV	Bowers Interchange 69 kV	3 2 1	
11105         837         regional reliability         Add and transformer 200, Co20-115 kV CRT 2         52.825.00         SPS         0601/16         Lamb Co 115 kV         LC-Life 115 kV           11173         854         regional reliability         Add and transformer 200, Co20-115 kV CRT 2         53.85.00         SPS         0601/16         (12016)         Eony 200 V         Eo		11124	854			\$33,367,500	SPS	05/01/18	06/01/18					1	
11173         884         regional reliability         Add and transformer Edge (20 20-115 kV CKT 2         93.85.200 bit (30 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -						\$22,150,000							Jones 230 kV	1	
11171         985         regions relability         Add to disardame chile 323/15 kV (XP2")         58.85.90         5P6         66/01/16         61/021         Carlie 220 kV         Carlie 15 kV           10956         577         regions relability         Add to be stage of 10 Mart to existing 10 Mart         52.250.00         SWPA         06/01/16         Popular Mart 5 existing 10 Mart         54.22.000         WR         06/01/16         M         Attem 58 V         Popular Mart 5 existing 10 Mart         Popular Mart 5 existing 10 Mart         54.22.000         WR         06/01/16         M         Attem 58 V         Popular Mart 5 existing 10 Mart         54.22.000         WR         06/01/18         M         Attem 58 V         Popular Mart 5 existing 10 Mart         54.22.000         WR         06/01/18         M         Attem 58 V         Popular Mart 5 existing 10 Mart 5 existing 10 Mart         54.22.000         WR         06/01/18         M         Attem 58 V         Popular Mart 5 existing 10 Mart					Add new 115 KV CKL Lamb Co to Lea County Littlefield			05/24/42				Lamp Co 115 KV		1	
10886         619         regional feliability-non CATT         Regio				regional reliability	Add 2nd transformer Carlise 230-115 KV CKT 2							Carlise 230 KV		2	
5030         2028         zonal - sponsored         add one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts </td <td></td> <td></td> <td>679</td> <td>regional reliability - non OATT</td> <td>Replace Poplar Bluff 2nd transformer with larger transformer. 70/70 MVA unit.</td> <td>\$2,250,000</td> <td>SWPA</td> <td></td> <td>06/01/18</td> <td></td> <td></td> <td>Poplar Bluff 69 KV</td> <td></td> <td>2 2 2</td>			679	regional reliability - non OATT	Replace Poplar Bluff 2nd transformer with larger transformer. 70/70 MVA unit.	\$2,250,000	SWPA		06/01/18			Poplar Bluff 69 KV		2 2 2	
5030         2028         zonal - sponsored         add one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts existing 10 Marts         statu one stage of 10 Marts </td <td></td> <td>50304</td> <td>30267</td> <td></td> <td>add one stage of 10 Mvar to existing 10 Mvar</td> <td>\$432,000</td> <td>WR</td> <td>05/01/18</td> <td>M</td> <td></td> <td></td> <td></td> <td></td> <td><u> </u></td>		50304	30267		add one stage of 10 Mvar to existing 10 Mvar	\$432,000	WR	05/01/18	M					<u> </u>	
11083         820         regions reliability         Tear count and rebuils 17h & Patiawn - Indian Hills 115k V CM 1         \$1,657,500         VM         0001/18         17h & Patiawn 115 kV         Indian Hills 115 kV           10619         451         regional reliability         Rebuils and reconductor 4.0 miles of 4.0 ACSR 65 kV to 1550 ACSR 161 kV from converting North Huntington to Misland REC to 56,000.000         AEP         0601/18         North Huntington 161 kV         Midland REC 161 kV           10520         451         regional reliability         Rebuils and reconductor 4.0 miles of 4.0 ACSR 56 kV to 1550 ACSR 161 kV from converting North Huntington to Misland REC to 56,000.000         AEP         0601/19         North Huntington 161 kV         Midland REC 161 kV           10520         451         regional reliability         Rebuil and reconductor Mainty from 8kV 40 ACSR to 161 kV 1560 ACSR. 161 kV 1560 ACSR.         \$5,000.000         AEP         0601/19         Midland REC 161 kV         Midland 161 kV           10521         451         regional reliability         Factorian Tellability         S1,000,000         AEP         0601/19         Midland 161 kV         Midland 56 kV <td< td=""><td></td><td></td><td></td><td></td><td>add one stage of 10 Mvar to existing 10 Mvar</td><td></td><td></td><td>05/01/18</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>					add one stage of 10 Mvar to existing 10 Mvar			05/01/18							
Vert 2019         Year 2019         Year 2019         North Huntington 161 kV         Midland REC 161 kV           10619         481         regional reliability         Rebuild and reconductor 4.0 miles of 40 ACSR 65 kV to 1590 ACSR 161 kV from onivering North Huntington to Midland REC to 56,000,000         AEP         0601/19         North Huntington 161 kV         Midland REC 161 kV           10620         481         regional reliability         Rebuild and reconductor Midland REC Midland.         51,500,000         AEP         0601/19         Midland REC 161 kV         Midland REC 161 kV           10621         481         regional reliability         Rebuild and reconductor Midland REC Midland.         52,500,000         AEP         0601/19         Midland REC 161 kV         Midland REC 161 kV           10624         481         regional reliability         Build Soninza-Midland 1500 ACSR 161 kV ine. Old Midland-Excelsior section to be converted from 65 kV to 161 kV. Add 4161 kV         517,000,000         AEP         0601/19         Midland 161 kV         Midland 161 kV           110624         481         regional reliability         Build Soninaz-Midland 1500 ACSR 151 KV Ine. Old Midland-Excelsior section to be converted from 65 kV to 161 kV. Add 4161 kV         517,000,000         AEP         06101/19         Bonanza Tap 161 kV         Midland 161 kV           11158         879         regional reliability         Rebun		10563	433		Reset ct's. New Rate A: 108 B: 108		WR						Moundridge 69 kV	1	
10619         481         regional reliability 161 KV. Addite 40 miles of 40 ACSR 161 KV from a converting North Huntington 16 Milland REC to 161 KV. Addit 40 miles of 40 ACSR 161 KV from a converting North Huntington 16 Milland REC to 161 KV. Addit 161 KV from a converting North Huntington 16 Milland REC to 10521         AEP         0601/19         North Huntington 161 KV         Milland REC 161 KV           10520         451         regional reliability Result and reconductor Milland REC Milland 401 (169 KV additation Milland REC Milland)         51,500,000         AEP         0501/19         Milland REC 161 KV         Milland 161 KV           10521         451         regional reliability regional reliability         North Huntington 106 KV 40 ACSR 10 161 KV 1500 ACSR.         51,500,000         AEP         0501/19         Milland REC 161 KV         Milland 161 KV           10524         451         regional reliability Federal reliability         North Huntington 150 ACSR 161 KV 1561 KV. Add 161 KV         51,700,000         AEP         0501/19         Milland REC 161 KV         Milland 161 KV           10524         451         regional reliability Height Schwart 1500 ACSR 161 KV Inter Clift Milling Charles Schwart Add 161 KV         51,700,000         AEP         0501/19         Schwart Schwart 300 KV         Milland 161 KV           11158         879         regional reliability Schwart 200 KV         Schwart 300 KV 10 KV 10 KV Add 161 KV         Schwart 400 KV 10 KV         Schwart 400 KV 10		11083	820	regional reliability	i ear down and reduild 17th & Fainawh - Indian Hills 115kV Ckt 1	\$1,687,500			06/01/18			17th & Fallawn 115 kV	jingian Hilis 115 kV	1	
Lob 19         Cold Transmission Field Constraints         Teginal Relation Field							rear 2019	9							
1560         481         regional reliability         Result and relocation finding REC-Matine from 69 kV 40 ACSR to 161 kV 1590 ACSR.         51 800.000         AEP         5601/15         Mitlaine REC-161 kV         Mitlaine 161 kV           15621         431         regional reliability         Automation from 69 kV 40 ACSR to 161 kV 1590 ACSR.         51 800.000         AEP         5601/15         Mitlaine REC-161 kV         Mitlaine 81 kV           15621         431         regional reliability         Automation from 69 kV 40 ACSR to 161 kV 1590 ACSR.         51 800.000         AEP         5601/15         Mitlaine REC-161 kV         Mitlaine 81 kV           15624         431         regional reliability         Existence         161 kV         161 kV         Mitlaine 161 kV         Mitlaine 161 kV           11054         879         regional reliability         Existence         151 kV         161 kV         AEP         6601/19         Bomaraz         Mitlaine 161 kV           11158         879         regional reliability         Recult 9 On Tile Proteine Float HEGE 138 kV line from 796 ACSR to 1590 ACSR. New summer ratings 287/287 limited by breaker.         59,000,000         AEP         6601/19         Subbel 138 kV         Proteine 138 kV		10619	481	regional reliability	Rebuild and reconductor 4.0 miles of 4/0 ACSR 69 kV to 1590 ACSR 161 kV from converting North Huntington to Midland REC to	\$5,000,000	AEP		06/01/19			North Huntington 161 kV	Midland REC 161 kV	1	
1021         481         regional reliability         Add 15169 V: addramsformer at Midland.         52,500,00         AEP         0601/13         Midland 161 kV         Midland 69 kV           10624         481         regional reliability         Euld Sommark-Midland 150 ACSR 161 kV line. Old Midland-Excelsion section to be converted from 59 kV to 161 kV. Add 4-161 kV         \$17,000,00         AEP         0601/13         Midland 161 kV         Midland 69 kV           11058         879         regional reliability         Breadmail         Build Sommark         S9,000,000         AEP         0601/19         Bluebell 138 kV         Midland 161 kV <td></td> <td></td> <td></td> <td></td> <td>TOT KV. AUU TOT KV (EMTINA) &amp; NORD HURDINGTON. Rebuild and considerate Midland REC, Midland from 50 kV / ID ACCER to 161 kV (1600 ACCER</td> <td></td> <td>1</td> <td>+</td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>1</td>					TOT KV. AUU TOT KV (EMTINA) & NORD HURDINGTON. Rebuild and considerate Midland REC, Midland from 50 kV / ID ACCER to 161 kV (1600 ACCER		1	+				-		1	
10624         481         regional reliability         Elificational Status Additional TSSD ACSR 161 KV Inc. Old Midland-Excelsion section to be converted from 58 KV 10161 KV. Add 4-161 KV         \$17,000,000         AEP         0501/19         Bonanza Tap 101 kV         Midland 161 kV           11158         879         regional reliability         Regional reliability         Regional reliability         Regional reliability         Regional reliability         Regional reliability         Bonanza Tap 101 kV         Midland 161 kV		10620		regional reliability	Add 161/69 KV autotransformer at Midland		AFP	1	06/01/19					1	
1024         451         regional reliability         treakers at Bonanza.         51/,000,00         AEP         06/0119         bonanza.         bonaza.         bonaza. <td></td> <td></td> <td></td> <td></td> <td>Build Bonanza-Midland 1590 ACSR 161 kV line. Old Midland-Excelsion section to be converted from 69 kV to 161 kV. Add 4-161 kV</td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>					Build Bonanza-Midland 1590 ACSR 161 kV line. Old Midland-Excelsion section to be converted from 69 kV to 161 kV. Add 4-161 kV			1							
11135 679 regional relationsy switches, CTs, wave trap. Signature 136 kV Pratimie 136 kV Pratimie 136 kV		10624	481	regional reliability	breakers at Bonanza.	\$17,000,000	AEP		06/01/19			Bonanza Tap 161 KV	Midland 161 KV	1	
billion billio		11158	879	regional reliability	Rebuild 9.0 mile Prativile-Bluebell 138 kV line from 795 ACSR to 1590 ACSR. New summer ratings 287/287 limited by breaker,	\$9,000,000	AFD		06/01/19			Bluebell 138 kV	Prattylle 138 kV	1	
10240 501 regional read/0107 Replace 600 A breaker with 1200A at Evenside 69 kV NW Henderson 69 kV NW Henderson 69 kV						**,***,***									
		10546	501	regional reliability	Neplace but A preaker with 1200A at Evenside 69 KV.	\$200,000	AEP CUS	05/01/10	06/01/19 06/01/19			Evenside 69 kV James River 69 kV	NW Henderson 69 kV Twin Oaks 69 kV	1	

	10877	671	regional reliability	Increase CT ratio at both Chickasaw and Ardmore. Also possibly change out relay	\$450,000	OGE		06/01/19			Ardmore 69 KV	Chickasaw 69 kV	
	10999	30212		Replace Jones Tap bus 1200A switch with 2000A switch.	\$250,000	OGE		06/01/19			Jones Tap 138 KV	Bryant 138 kV	
	11119	849		Upgrade the existing 600 amp 69 kV switches in Kentucky Sub to 1200 amp	\$60,000	OGE		06/01/19			Kentucky 69 kV	Kentucky Tap 69 KV	
	11207	910		Replace wavetrap	\$225,000	OGE		06/01/19			Bryant 138 kV	Memorial 138 kV	
	10906	689	regional reliability	Replace South Waverly 161/69kV transformer with larger 3D/33MVA model; interim mitigation is to move 20% of load off S Waverly 161kV bus starting in 2010	\$2,000,000	KCPL		06/01/19			South Waverly 161kV	South Waverly 69kV	
	11136	859	regional reliability	Reconductor Hawthorn - Birmingham 161kV	\$1,670,625	KCPL		06/01/19			Birmingham 161kV	Hawthorn 161kV	
	10994	30211	regional reliability	Replace Medicine Lodge 138/115 kV transformer with a larger 147/170 MVA transformer	\$3,825,000	MKEC		06/01/19			Medicine Lodge 138 kV	Medicine Lodge 115 kV	
	10991	30208	regional reliability	Rebuild MKEC portion of the Clearwater-Milan tap 115 kV with bundled 1192.5 kcmil ACSR conductor (Bunting)	\$3,150,000	MKEC		06/01/19			Clearwater 138 kV	Mian Tap 138 kV	_
	10993	30210		Replace Wave Trap at Harper Substation.	\$225,000	MKEC		06/01/19			Harper 138 kV	Mian Tap 138 kV	_
	10990	753	regional reliability	Reconcluctor and upgrade terminal equipment to effect higher rating by 2019. 240 MVA Normal Continuous Rating. 240 MVA 4-Hour Emergency Rating.	\$5,000,000	NPPD	05/01/19	06/01/19			Beatrice 115 KV	Harbine 115 kV	
	50254	30241	regional reliability	Install 21.6 Mvar capacitor bank	\$2,213,000	OPPD		06/01/19			Neb City U Sub 903 69 kV		_
	50306	30269	regional reliability	Install 2 Blocks of 14.4 Mvar	\$1,166,400	SPS		06/01/19			Lamb Co 115 kV		
	50307	30270	regional reliability	install min. 2 blocks 14.4 Mvar	\$1,166,400	SPS		06/01/19			Deaf Smith 115 kV		
331	10195	151		Add third Tuco 115/69 kV autotransformer with 84/84 MVA rating.	\$1,260,000	SPS		06/01/19		01/27/09	Tuco 69 KV	Tuco 115 kV	
331	10197	153	regional reliability	Add third Potash Junction Interchange 115/69 kV transformer.	\$600,000	SPS		06/01/19			Potash Junc 69 kV	Potash June 115 kV	
	11092	825		Reconductor 0.45 miles 69 kV from 4/0 to 397.5 ACSR	\$225,000	SPS		06/01/19			Artesia 69 kV	CV-Artesia 69 KV	
-	11094	827		Reconductor 8.34 miles 115 kV from 397.5 to 750 ACSR	\$3,518,438	SPS		06/01/19		-	Cherry 115 KV	Northwest 115 kV	
-	11099	832		Add 2nd transformer 115/69 KV 84/36 MVA CKT 2	\$1,890,000	SPS	-	06/01/19		-	Northwest 69 kV	Northwest 115 kV	_
	11105	838		Add new 115 kV Ckt Hockley Co-E Leveland Co	\$3.037.500	SPS		06/01/19			Hockley Co 115 kV	E Leveland 115 Kv	
-	11126	855		convert 69 KV load onto 115 kV	85375	SPS		06/01/19			Stanton 69 KV	Stanton 69 KV	
	11126			Replace NICHOLS Line Trap with 1200 Amp B unit 230 kV	\$450,000	SPS	-	06/01/19		-	Nichols Station 230 kV	Amarillo South Interchange 230 kV	
		901		Replace NICHOLS Line Trap with 1200 Amp B unit 230 KV Replace Springfield transformer #1 three winding transformer with 70 MVA auto transformer.		SWPA				_			
	10860	655		Replace Springheid transformer #1 three winding transformer with 70 MVA auto transformer. convert County Line - Arnold to 115 kV. Valley Falls sub converted to 115	\$825,000	WR	05/01/19	06/01/19 M		_	Springfield 161 kV County Line 115 kV	Springfield 69 kV Valley Falls 115 kV	
		898			\$8,521,875					-			
	11194	898	zonal - sponsored	convert County Line - Arnold to 115 kV. Valley Falls sub converted to 115	\$9,534,375	WR	05/01/19	M			Amold 115 kV	Valley Falls 115 kV	
_	10992	30209	regional reliability	Rebuild Westar portion of the Clearwater-Milan tap 115 kV with bundled 1192.5 kcmll ACSR conductor (Bunting)	\$3,431,250	WR		06/01/19			Clearwater 138 kV	Milan Tap 138 kV	
						Withdraw	1						
00	10444	347		Reconductor with 2.7 miles 477 ACSR 69 kV Woodlawn-Baldwin. Reset relays.	\$2,000,000	AEP	05/01/11	D	NTC-Withdraw		Baldwin 69 kV	Woodlawn 69 kV	
27	10614	477		Reconductor 6.9 miles with 477 ACSR 69 kV from Baldwin - Karnack Tap.	\$6,900,000	AEP	06/01/13	D	NTC-Withdraw	01/27/09	Baldwin 69 kV	Kamack Tap 69 kV	_
6	10442	345		Replace 69 KV switch at Magnola tap for new emergency limit 85 MVA.	\$125,000	AEP	05/01/10	D	NTC-Withdraw	01/16/09	Qultman-Magnolia 69 kV	Forest Hills REC 69 kV	
1	10572 50182	441		Reconductor 69kV line from 636 ACSR to 762.8 ACSS/TW	\$805,000	CUS	05/01/12	D	NTC-Withdraw	02/13/08	Kickapoo 69 kV	Sunset 69 kV	
		30174		Install 5 Mvar capacitor at Craig 69 KV bus.	\$350,000	GMO		D	NTC-Withdraw	01/27/09	Craig 69 kV		
34	50082	30076		Install 12 Mvar capacitor at Warsaw 69 kV bus.	\$409,900	GMO		D	NTC-Withdraw		Warsaw 69 KV		
28	50185	30177		Add additional 7.2 Mvar capacitor at Tahlequah West, for a 28.8 Mvar total.	\$291,600	GRDA		D	NTC-Withdraw	1/27/200	9 Tahlequah West 69 kV		
909	10492	379		New Hillsdale-Cedar Niles 161 kV Line and Cedar Niles ring bus	\$5,418,700	KCPL	05/01/15	D	NTC-Withdraw	02/13/08	Hillsdale 161 kV	Cedar Niles 161 KV	
02	10515	397		Convert 7 mile Mustang -Yukon 69 kV line to 138 kV.	\$6,850,000	OGE	05/01/12	D	NTC-Withdraw		Mustang 138 kV	Yukon 138 kV	_
02 03	10516 50100	397		Convert 3 mile Yukon - Cimarron 69 kV line to 138 kV.	\$3,500,000	OGE	05/01/12	D	NTC-Withdraw	02/13/08	Yukan 138 kV	Cimarron 138 kV	_
		30094		Install 6 Mvar capacitor at Mustang 69 kV.	\$162,000	WFEC		D	NTC-Withdraw		Mustang 69 kV		
33	10811	623		Rebuild the 14.63 miles of 69 kV line from Timber Junction - Winfield.	\$7,415,000	WR	12/31/10	D	NTC-Withdraw	01/27/09	Timber Junction 69 kV	City Of Winfield 69 Kv	_
33	10812	624		Build new 8.76 mile Fort Junction - West Junction City 115 kV line that follows the path of the JEC - Summit 345 kV line. Remove old double circuit and West Junction City Junction (East) - West Junction City 115 kV line.	\$4,927,500	WR	05/01/11	D	NTC-Withdraw	01/27/09	Fort Junction Switching Station 115 kV	West Junction City 115 kV	
06	10536	410		Rebuild Ark Valley-Tower 33 115 kV	\$2,306,250	WR		D	NTC-Withdraw	02/13/08	Ark Valley 115 kV	Tower 33 115 kV	
333	10640	495		Rebuild the 5.49 mile Lawrence Hill to Mockingbird Hill 115 kV line.	\$2,377,448	WR		D	NTC-Withdraw	01/27/09	Lawrence Hill 115kV	Mockingbird Hill 115 kV	
	10218	169		Uprate CT ratio on Chaoman - Clav Center 115 KV line.	\$10,000	WR	05/01/17	D D	NTC-Withdraw		Chapman 115 kV	Clay Center Junction 115 KV	

# **Appendix B – Empire District STEP Projects**

	SPP Board Of Directors Approved Transmission				
Project Type	Project Description/Comments	Cost Estimate	From Bus Name	To Bus Name	Circuit
		YEAR 2010			
	Install (3) 22 Mvar capacitor banks for a total of 66 Mvar at				
Zonal Reliability	Riverside Sub #438	\$2,600,000	SUB 438 - Riverside 161 kV		
	Change CT setting on Breaker #6973 at Baxter #271 to				
egional reliability	800/5 ratio	\$50,000	SUB 404 - Hockerville 69 kV	SUB 271 - Baxter Springs West 69 kV	1
regional reliability	Change CT ratio on breaker #6936 at Aurora Substation 124	\$5,000	SUB 124 - Aurora H.T. 69 kV	SUB 152 - Monett H.T. 69 kV	1
	Rebuild 1.7 mile Neosho South Jct Neosho SPA 161 kV				
	from 336 ACSR to 795 ACSR and replace terminal		SUB 184 - Neosho South Junction		
ransmission service	equipment	\$1,215,000	161 kV	Neosho (SWPA) 161 kV	1
	Replace 600 amp disconnect switches with a minimum				
	1,2300 amp units and replace leads on Breaker #6965 at				
regional reliability	Sub #64 and #6932 at Sub #145	\$55,000	SUB 145 - Joplin West 7th 69 kV	Sub 64 - Joplin 10th ST 69 kv	1
		YEAR 2011			
	Replace auto transformer at ORONOGO 110 with 150 MVA				
transmission service	rated auto transformer due to increased generation available	\$4,000,000	ORO110 5 161 kV	ORO110 2 69 kV	1
	Reconductor 11.9 miles of Oronogo Jct. to Riverton 161 kV				
	Ckt. 1 from 556 ACSR to 795 ACSR, change CT settings @				
transmission service	Oronogo, and replace wavetrap.	\$5,750,000	Sub 110 - Oronogo Jct.	Sub 167 - Riverton	1
		YEAR 2012	, and the second s		
	Reconductor 8.92 miles Nichols-Sedalis 69 kV with 556				
regional reliability	ACSR and upgrade CTs	\$3,520,000	SUB 170 - Nichols St 69 kV	Sedalia 69 kV	1
	Replace jumpers on breaker #6950 at Blackhawk Junction				
regional reliability	with 556 ACSR for rates 73/89 MVA	\$50,000	Jamesville 69 kV	SUB 415 - Blackhawk Junction 69 kV	1
, ,		YEAR 2013			
		NONE			
		YEAR 2014			
regional reliability	Replace jumpers		SUB 403 - Jasper West Tap 69 kV	SUB 249 - Boston East 69 kV	1
	Raise structures on Diamond Jct Sarcoxie Southwest 69	+ ,			
regional reliability	kV line to achieve a new rating B of 44 MVA	\$50.000	SUB 131 - Diamond Junction 69 kV	SUB 362 - Sarcoxie Southwest 69 kV	1
	Replace switch on transfer bus at Sub #167 for Rate $B = 91$	· · · · · · · · ·			
regional reliability	MVA	\$75.000	Sub 167 - Riverton 69 kV	SUB 278 - Galena Northeast 69 kV	1
	Reconductor 1.0 Mile of 4/0 ACSR with 336 ACSR for 65	+ -,			
regional reliability	MVA Rate B	\$400.000	SUB 436 - Webb City Cardinal 69 kV	SUB 110 - Oronogo Junction 69 kV	1
<u>G</u>		YEAR 2015			
regional reliability	Build new 9.2 mile Substation 383 - Monett 5 161 kV line		SUB 383 - Monett 161 kV	South Monett 161 kV	1
- 9	Install 3-winding transformer connecting new 161 kv line to	<i></i>			
regional reliability	Monett City South 69 kV	\$8,000.000	South Monett 161 kV	SUB 376 - Monett City South 69 kV	1
regional reliability	Reconductor 1.2 mi with 336 ACSR		Monett City South Jct. 69 kV	Monett City East 69 kV	1
		YEAR 2016			
zonal - sponsored	Convert 27 mi of 34.5 kV to 69 kV in the Baxter Springs area	\$12,375,000			

NP SPP Board Of Directors Approved Transmission Expansion Projects 1-26-10 - Empire District Electric Projects Only (continued) YEAR 2017 Reconductor 7.55 miles Diamond-Jct - Sarcoxie Southwest regional reliability 69 kV lines from 1/0 Cu to 336 ACSR \$2,274,000 SUB 131 - Diamond Junction 69 kV SUB 362 - Sarcoxie Southwest 69 kV SUB 439 - Stateline 161 kV regional reliability Joplin 59 161 kV Gateway 161 kV regional reliability Tear down the Riverton to Joplin 59 69 kV line, rebuilding the Joplin 59 161 kV regional reliability line to 161 kV from Stateline to outside Joplin sub. Tear Gateway 161 kV Pillsbury 161 kV down and rebuild Joplin 59 to Gateway to Pillsbury to Reinmiller, converting those 69 kV lines to 161 kV. Tap the regional reliability 161 kV line between Joplin 59 and Gateway at Joplin 422 \$25,000,000 Pillsbury 161 kV Reinmiller 161 kV Reconductor 3.5 miles Atlas Jct - Carthage Northwest 69 kV regional reliability lines from 4/0 ACSR for 65 MVA Rate B \$1,277,935 SUB 109 - Atlas Junction 69 kV SUB 108 - Carthage Northwest 69 kV **YEAR 2018** NONE YEAR 2019 NONE

# Appendix C Empire 2010-2014 Transmission and Distribution Construction Budget \*\*Highly Confidential in its Entirety\*\*

NP

### Abbreviations

ACFB – Atmospheric Circulating Fluidized Bed

AECI - Associated Electric Cooperative

AEP – American Electric Power

AFUDC – Allowance for Funds Used During Construction

AMI – Advanced Metering Infrastructure

AQCS – Air Quality Control Systems

AWEA – American Wind Energy Association

BNSF – Burlington Northern Santa Fe Railroad

Btu – British Thermal Unit

CAES – Compressed Air Energy Storage

CAIR – Clean Air Interstate Rule

CAMR - Clean Air Mercury Rule

CC – Combined cycle

CCS – Carbon capture and sequestration

CFB – Circulating Fluidized Bed

CO<sub>2</sub> – Carbon dioxide

CSP – Concentrating solar power

CT – Combustion turbine

DOE – Department of Energy

EIA – Energy Information Administration

EPA – U.S. Environmental Protection Agency

ESBWR – Economic simplified boiling-water reactor

FERC – Federal Energy Regulatory Commission

GDP – Gross Domestic Product

Hg – Mercury

HRSG – Heat recovery steam generator

IGCC – Integrated Gasification Combined Cycle

IRP - Integrated Resource Plan or integrated resource planning

ITP - Integrated Transmission Planning

KCP&L – Kansas City Power & Light

kV – kilovolt

kW – kilowatt

kWh – kilowatthour

MCSP - Missouri Carbon Sequestration Project

MMBtu- Millions of British Thermal Units

MPSC – Missouri Public Service Commission

MW – Megawatt

MWh – Megawatthour

NO<sub>x</sub> – Nitrous oxides

NRC - U.S. Nuclear Regulatory Commission

NYMEX – New York Mercantile Exchange

NSI – Net System Input

O&M – Operating and Maintenance

OG&E – Oklahoma Gas & Electric

OMS - Outage Management System

PPA – Power Purchase Agreement

PRB – Power River Basin

PV - Photovoltaics

PVRR - Present Value of Revenue Requirements

REC - Renewable Energy Credit

RMP - Risk Management Policy

RPS - Renewable Portfolio Standard

SCR - Selective catalytic reduction

SLCC - State Line Combined Cycle

SMR - Small modular reactor

 $SO_2 - Sulfur \ dioxide$ 

SPP – Southwest Power Pool

SPP RTO - Southwest Power Pool Regional Transmission Organization

STEP – SPP Transmission Expansion Plan

VOC – Volatile Organic Compounds

WTI – West Texas Intermediate

92