4 CSR 240-22.045 Transmission and Distribution Analysis

PURPOSE: This rule specifies the minimum standards for the scope and level of detail required for transmission and distribution network analysis and reporting.

(1) In developing its resource acquisition strategy, the electric utility shall consider the adequacy of the transmission network in fulfilling the fundamental planning objectives set out in 4 CSR 240-22.010, including at a minimum:

(A) Upgrade transmission networks to reduce transmission power and energy losses. Opportunities to reduce transmission network losses are among the supply-side resources evaluated pursuant to 4 CSR 240-22.040 (6). The utility shall assess the age, condition and efficiency level of existing transmission facilities, and shall analyze the feasibility and cost-effectiveness of transmission network loss-reduction measures.

(B) Upgrade transmission networks to improve reliability. [SPP: goal or purpose with respect to this component?]

(C) Interconnect new generation facilities. When evaluating new generation as a resource option pursuant to 4 CSR 240-22.040(3), the utility shall assess the need to construct transmission facilities to interconnect the new generation and shall reflect those transmission facilities in the cost benefit analyses of the resource options.

(D) New transmission to facilitate power purchases or sales. To enable the utility to access power to purchase or sell pursuant to 4 CSR 240-22.040 (5), the utility shall assess the transmission upgrades needed to reduce transmission congestion and relieve constraints. [MISO: clarification of "reduce transmission congestion". RTO does this assessment. Will submit substitute language.] The portion of costs of these upgrades that are allocated to the utility shall be reflected in the analysis of resource options.

(E) Transmission improvements to incorporate smart grid technologies. The smart grid is expected to enable the utility to engage in advanced demand-side management, especially demand response and customer owned generation. [SPP: goal or purpose with respect to this component?][Staff: intent was to meet EISA standards]

(F) Avoided transmission cost. The utility shall develop an avoided transmission capacity cost to include in the demand period avoided costs in 4 CSR 240-22.050(2)(A)2 and in 4 CSR 240-22.050(2)(D)1. [UE: there is a lot of redundancy in (1) and (2). Combine?][Dogwood: utilities need to talk with RTOs regarding avoided transmission costs.][MISO: it is unclear whether or not the utility can calculate this]

(2) In developing its resource acquisition strategy, the electric utility shall consider the adequacy of the distribution network in fulfilling the fundamental planning objectives set out in 4 CSR 240-22.010, including at a minimum:

(A) Upgrade distribution networks to reduce distribution power and energy losses. Opportunities to reduce distribution network losses are among the supply-side resources evaluated pursuant to 4 CSR 240-22.040 (6). The utility shall assess the age, condition and efficiency level of existing distribution facilities, [KCPL: how do you do this and does it mean anything when you do? Clarify that this isn't a line by line analysis] and shall analyze the feasibility and cost-effectiveness of distribution network loss-reduction measures. [Staff: there isn't a reporting requirement to provide this assessment. Need to coordinate with Chapter 23 rules.]

(B) Upgrade distribution networks to improve reliability.

(C) Distribution improvements to incorporate smart grid technologies. The smart grid is expected to enable the utility to engage in advanced demand-side management, especially demand response and customer owned generation.

(D) Avoided distribution cost. The utility shall develop an avoided distribution capacity cost to include in the demand period avoided costs in 4 CSR 240-22.050(2)(A)2 and in 4 CSR 240-22.050(2)(D)1.

(3) Analysis required for transmission upgrades. The responsibility [Staff: use process instead of responsibility] for planning transmission upgrades is shared [SPP: shared is vague. Perhaps mention the RTO transmission tariff] between the utility and the Regional Transmission Organization (RTO) it belongs to. Each year,[Dogwood: change to routinely (allows for change in timing to other than each year]] the RTO develops long-term transmission expansion plans designed to meet North American Electric Reliability Corporation (NERC) reliability standards. The RTO transmission expansion plans include upgrades for the purposes of interconnecting generation, improving reliability and improving economics.

(A) The utility shall review and assess the RTO transmission expansion plans each year to determine whether the RTO transmission expansion plans, in the judgment of the utility decision makers, are in the best interests of the utility's customers. [SPP: "interests of the utility's customers" decided when Commission allowed utility to join RTO. Is this requiring a project by project analysis?][Staff: intention isn't to analyze projects. Will try to come up with different language.][KCPL: "non-detrimental" instead of "best interest"][Dogwood: Appropriate to ask to report SPP's plan and utility's transmission plans in addition to RTOs. Otherwise are we asking for a legal determination? Long-term vs short-term?] [Dogwood: Is this needed? Can it be deleted with suggested changes to (C)] [proctor: don't take out. Purpose is to make sure utility is involved in transmission planning. States obiligation of utility to participate in the development of RTO expansion plans and review of the plan. Add something to the reporting requirments?]

(B) If the utility determines that the RTO transmission expansion plans adequately describe the regional transmission additions over the planning horizon addressed in the RTO transmission expansion plans, [Proctor: remove language up to this point. This would remove tie to (A)]the utility may use the RTO plan:

1. To develop information regarding the cost of transmission upgrades to interconnect generation, to facilitate power purchases and sales, and to otherwise maintain a viable transmission network;
2. To identify transmission upgrades to incorporate smart grid technologies;
3. To estimate avoided transmission costs;
4. To estimate the portion and amount of incremental costs of regional transmission upgrades that would be allocated to the utility; and
5. To estimate any revenue credits the utility will receive in the future for previously built or planned regional transmission upgrades.

(C) The utility shall develop or compile information and use it in lieu of, or as a supplement to, transmission requirements and cost information derived from the RTO transmission expansion plans if the utility determines that the RTO information is insufficient.[KCPL: is this requiring utility to analyze the alternative to leave RTO?][SPP: insufficient with regard to meeting requirements of resource planning][Staff: to requirements of (B) above][proctor: combine (B) and (C)]

(D) For generation resources to serve the utility's load, whether the generation is owned by the utility or energy that is obtained through a purchased power contract from a specific generation source, the utility shall identify transmission upgrades and cost required to interconnect the generator, distinguishing: [Dogwood: combine in and out of footprint analysis]

1. Generator within the RTO footprint. The utility shall assess and reflect in the cost analysis of the generation resource:
   a. Generator interconnection transmission physical upgrades;

i. Identify expected physical transmission upgrades;
ii. Estimate total cost of the physical upgrades; and
iii. Estimate portion of cost allocated to the utility;
b. Added transmission deliverability upgrades
i. Identify expected transmission upgrades required for firm transmission service from the generator to the utility's load, including any third party transmission upgrades required; and
ii. Identify expected transmission upgrades from the generator to the load required to obtain financial transmission rights and expected congestion costs;
2. Generator outside the RTO footprint. The utility shall assess and reflect in the cost analysis of the generation resource:
a. Generator interconnection transmission physical upgrades;
i. Identify expected transmission physical upgrades;
ii. Estimate total cost of the physical upgrades; and
iii. Estimate portion of cost allocated to the utility;
b. Added transmission deliverability upgrades;
i. Identify expected transmission upgrades required for firm transmission service from the generator to the RTO footprint;
ii. Identify expected transmission upgrades required across the RTO footprint to the utility's load;
iii. Estimate total cost of the physical upgrades, both inside and outside the RTO footprint; and
iv. Estimate portion and amount of cost allocated to the utility.

(4) Analysis required for transmission and distribution network investments to incorporate smart grid technologies. [KCPL: Analyze Smart Grid automation to support other aspects of resource planning such as distributed generation, demand-response programs, etc. All investments may not fall into analysis for resource planning.]

(A) The utility shall review and assess the RTO transmission expansion plan each year. The utility shall determine whether the RTO plans to upgrade the transmission network to incorporate smart grid investments, in the judgment of the utility decision makers, are in the best interests of the utility's customers. [Dogwood: best interest?][SPP: intention of review and analysis? Is this meaningful for Smart Grid?][Dogwood: may want to broaden to more than expansion plan][MISO: MISO may not make determination of best interest. MISO is supportive role] [OPC: reluctant to delete (4)(A) and (3)(A). Agree that it may need to be broadened to include operating procedures at RTOs][proctor: don't take out. States obiligation of utility to participate in the RTO expansion plans and review of the plan]

(B) The utility shall augment the RTO plans for transmission upgrades to incorporate smart grid technologies as necessary to optimize the investment in the smart grid technologies for its service territory.

(C) The utility shall develop plans for distribution network upgrades as necessary to optimize its investment in the smart grid technologies.

(D) The utility shall optimize investment in transmission and distribution smart grid technologies based on an analysis of:

1. Total costs, including:
a. Costs of the smart grid investments;
b. Costs of the non-advanced grid investments;
c. Reduced resource costs, especially through enhanced demand response resources and enhanced integration of customer owned generation resources; and
d. Reduced production costs;
2. Cost effectiveness, including:
a. The monetary values of all incremental costs of the energy resources and delivery system based on smart grid technologies relative to the costs of the energy resources and delivery system based on non-advanced grid technologies;

b. The monetary values of all incremental benefits of the energy resources and delivery system based on smart grid technologies relative to the costs of the energy resources and delivery system based on non-advanced grid technologies; and

c. Additional non-monetary factors considered by the utility;

3. Improved reliability, including:

a. Increased use of digital information and controls technologies; and

b. Integration of smart appliances and consumer devices that respond to price or other signals to automatically adjust demand;

c. Impact of customer response to price signals and improved control options;

4. Security, including:

a. Decentralized control of grid and self correcting features;

b. Decentralized supply resources;

c. Improved energy independence and security of supply;

d. Security of bi-directional communications and customer privacy;

5. System performance, including:

a. Frequency of outages;

b. Severity of outages;

c. Enhanced flexibility;

d. Reduced cost;

6. Societal benefit, including:

a. More consumer power choices;

b. Improved utilization of existing resources;

c. Opportunity to minimize cost in response to price signals;

d. Opportunity to minimize environmental impact in response to environmental signals;

7. Any other factors identified by the utility; and

8. Any other factors identified in the special contemporary issues process pursuant to 4 CSR 240-22.080 (8~~7~~).

(E) Before investing in non-advanced transmission and distribution grid technologies the utility shall:

1. Conduct an analysis which demonstrates that investment in each non-advanced transmission and distribution upgrade is more beneficial to consumers than an investment in the equivalent upgrade incorporating smart grid technologies;

2. Document the analysis;

3. Document its decision to invest in non-advanced transmission or distribution grid technologies; and

4. Include investment in non-advanced transmission and distribution grid technologies in its resource acquisition strategy pursuant to 4 CSR 240-22.070 (10). [Dogwood: intend to analyze same as in (D)?][KCPL: is this needed? Wouldn't this be an outcome of (D)? Prescriptive. Hard to determine what is "non-advanced"][Staff: define non-advance technologies]
[DNR: What about EISA cost recovery requirement?]

(5) 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: [OPC: add brief summary of RTO expansion plans]

(A) Copy of the most recent RTO long-term transmission expansion plan including documentation of the analysis and conclusions regarding investments in transmission smart grid technologies and any other additional transmission expansion plan of the RTO relevant to the utility's resource planning, provided with the full compliance filing and with the annual update filing;

(B) A report documenting the utility's assessment of whether the RTO's long-term transmission expansion plan including documentation of the analysis and conclusions regarding investments in transmission smart grid technologies is in

the best interests of the utility's customers; [UE: combine with (F)? would this documentation fulfill summary of RTO expansion plan requirement?]

(C) A report that identifies the physical transmission upgrades needed to interconnect generation, facilitate power purchases and sales, and otherwise maintain a viable transmission network, including:

1. A list of the transmission upgrades needed to physically interconnect a generation source within the RTO footprint;

2. A list of the transmission upgrades needed to enhance deliverability including required firm service from the generator to the utility's load and financial transmission rights and congestion costs related to a generation resource within the RTO footprint;

3. A list of transmission upgrades needed to physically interconnect a generation source outside of the RTO footprint;

4. A list of the transmission upgrades needed to provide firm service from the generator to the RTO footprint;

5. The estimated total cost of each transmission upgrade;

6. The estimated fraction of the total cost and amount of each transmission upgrade allocated to the utility.

(D) A report that documents the utility's plans to upgrade transmission and distribution networks to incorporate smart grid technologies. The report shall include:

1. Documentation of the analysis and utility's conclusions regarding the utility's investments in transmission and distribution smart grid technologies;

2. A description the utility's efforts at incorporating smart grid technologies into its transmission and distribution networks;

3. A description of the impact of the implementation of distribution smart grid technologies on the selection of a resource acquisition strategy; and

4. A description of the impact of the implementation of transmission smart grid technologies on the selection of a resource acquisition strategy.

(E) If the utility plans to implement non-advanced technologies instead of smart grid technologies, the report shall document the analysis that demonstrates that non-advanced grid technologies are more appropriate and beneficial to consumers.

(F) A report on expected costs for at least the upcoming ten (10) years from RTO transmission upgrades not directly related to the utility's addition of generation. The utility shall prepare a report documenting its determination whether the RTO transmission expansion plans, in the judgment of the utility decision makers, are in the best interests of the utility's customers and file it with the full compliance filing or annual update filing. [EDE: study done on 10 year but there is typically only 9 years left after utility review] [KCPL: comments in previous sections apply here also.]

AUTHORITY: sections TBD