BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION

In the Matter of the Joint Application	)	
of Entergy Arkansas, Inc., Mid South	)	
TransCo LLC, Transmission Company	)	
Arkansas, LLC and ITC Midsouth LLC	)	File No. EO-2013-0396
for Approval of Transfer of Assets and	)	
Certificate of Convenience and Necessity,	)	
and Merger and, in connection therewith,	)	
Certain Other Related Transactions	)	

EXHIBIT JEJ-9

VALUE OF RELIABILITY IMPROVEMENTS ON ITC SYSTEM

Determining the Value of Reliability Improvements on the ITC System

H. Lee Willis and Don Morrow Quanta Technology
June 25, 2012

Introduction

This report summarizes the results of a study using the US Department of Energy's Interruption Cost Estimator (the DOE ICE) to compute the value of a one-minute improvement in ITC/METC's reliability of delivery on its system. The work was done by Quanta Technology, specifically Don Morrow and Lee Willis.

DOE's Interruption Cost Estimator

DOE's ICE is a web-based analysis tool developed by Lawrence Berkeley National Laboratory and Freeman Sullivan and Associates, one of the nation's leading utility market/customer analysis firms. The model computes the lost economic value to a group of electric consumers of power interruptions in the power provided by their utility, and has specific features to compute the total customer value of an improvement in reliability. Quanta's project team is familiar and experienced both with the ICE model itself as well as reliability-value models in general. It can be found at http://www.icecalculator.com/.

Description of Analysis

The model was set up on the most recent customer count, peak and energy data, and reliability results data available for the entirety of ITC-METC's customer base, which consists of the two major electric utilities in Michigan, DTE Energy and Consumers Energy. Table 1 shows the data used.

Table 1: Data Used in the Application of the DOE Interruption Cost Model

Factor		DTE	Consumers	Totals
Customers	Resid	2,001,589	1,603,222	3,604,810
	Comm	190,483	219,870	410,352
	Indu	1,101	8,504	9,605
	Other	1,976	2,041	4,016
	Total C&I&O	193,559	230,414	423,973
	TOTAL Customers	2,195,148	1,833,636	4,028,783
MW peak	Summer	11,951.37	9,107.33	21,059
MWhr sales		61,742,844	45,779,797	107,522,641
Load factor		59%	57%	58%
Peak/customer	kW	5.44	4.97	5.23
kWhr/customer		28127	24967	26689
Reliability - all	SAIFI	1.02	1.475	1.217
	SAIDI	426	538	474
Storms excl.	SAIFI	0.76	1.15	0.93
	SAIDI	152	254	196

QUANTA TECHNOLOGY

Important Details of Analysis Using the ICE Model

A one-minute improvement in SAIDI, due to improved reliability of supply, would occur due to a slight improvement in *SAIFI.* The correct way to model that is to recognize that CAIDI, the average restoration time, would be unaffected by improvements in the inherent reliability of the transmission system and equipment providing the power – the improvement would be due to an improvement in the outage frequency of the system/equipment providing the power. The project team represented the reliability improvements in this manner.

DOE's ICE computes the economic value of electric service interruptions and of improvements in electric service reliability, almost entirely on the basis of lost productivity and other negative impacts seen by industrial and commercial energy consumers. It assigns a very low weight/value to any impacts on residential energy consumers. In the computed results given below, slightly less than 2% of the total economic values are due to the residential class. This is among the lowest impact costs Quanta Technology has seen. There are credible reliability-value models that assign a much higher value to the residential segment, and that would therefore give a much higher estimate of total value. However, reliability value factors for the C&I class are based on hard economic data reported by industry and are fairly easy to defend. Those in ICE are based on US government data and can are therefore quite credible. By contrast, economic value of reliability in the residential sector is based on psychological or "soft" customer surveys and a technical area not without dispute and controversy. DOE seems to have erred here on the side of extremely conservative values, values so low they are quite easy to defend.

The ICE model was used to compute both 1 year (next year) and 30-year net present value (NPV) results. Quanta Technology used the ICE model's default discount rate (6%) and inflation factor (2%) for Michigan rather than override them. Note that it is not appropriate to use ITC's or the utilities' economic factors here: the NPV value being computed is for the energy consumers (essentially, a good portion of the Michigan economy as a whole) and could therefore have very different factors than ITC or a utility.

Additionally, the numbers given here were computed without taking into account the impact – almost certainly positive – that this level of improved reliability would have during storms: the one-minute improvement and the economic value computed are based on improvements in the storms-excluded reliability for DTE, Consumers, etc. This was done because the project team interpreted several guidelines in ICE's documentation as indicated DOE thinks it is inappropriate to apply to storm-type interruption situations. Very likely an analysis that did include storm-outage improvement would show a significant increase in the economic values given below. However, that could not be done without using either a different model or making adjustments to the ICE results before including them as storms-included results.

Results

Table 3 gives the full details of computed values the project team developed. The key results are shown in Table 2.

Table 2: Computed economic value of one-minute improvement in non-storm SAIDI:

Total NPV of the improvement to energy consumers served by ITC-Michigan:	$139 M
Average NPV savings per energy consumer:	$35.00
Average NPV savings per kW of peak demand:	$6.6
Total of per year improvement to energy consumers served by ITC-Michigan:	$7.7 M
Average per year savings per energy consumer:	$1.90
Average per year savings per kW of peak demand:	$.36

The details given in Table 3 show that the total economic impact for Consumers Energy is larger than for DTE, despite it serving fewer customers. Table 3 also shows slight differences in per customer and per kW results by company. The reason is that Consumers is the larger company from the perspective of ICE's modeling. As mentioned earlier ICE bases its estimates of economic value almost entirely on C&I customer business impacts. Consumers, while having about 20% fewer customers overall than DTE, has 15% more non-residential energy consumers on its system (230K vs. 194K as modeled). Therefore, ICE computes a higher total economic impact of reliability improvements for it. And because C&I customers make up a much higher proportion of the Consumers customer base than the DTE customer base (14.3% vs. 9.6%) the computed value per average customer is higher, too.

Conclusions and Comments

The results show a significant economic value to a one-minute improvement in SAIDI in the ITC-METC service area. The numbers shown are consistent with Quanta Technology's expectations based on previous studies of a similar nature and the use of other reliability models and seem reasonable if perhaps slightly conservative.

Table 3: Results of the Analysis

Value of.01 and 1 min incremental		SAIFI=.755	SAIFI=1.1455	SAIFI=1.209
using non-storm data	30 year NPV total	$63,105,492	$76,067,198	$139,172,690
	30 year per cust	$29	$42	$35
	30 yr NPV per kW	$5.27	$8.36	$6.61
	1 year	$3,478,319	$4,192,757	$7,671,076
	1 year per cust	$1.6	$2.3	$1.90
	per yea, per kW	$0.29	$0.46	$0.36