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 whether there is any need to:

(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~~ meet reliability standards.

(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) Establish ~~N~~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. The portion of costs of these upgrades that are allocated to the utility shall be reflected in the analysis of resource options.

(E) Make ~~T~~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.

~~(F) Avoided transmission cost.~~

(2) 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.

(~~2~~3) 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 whether there is any need to:

(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, and shall analyze the feasibility and cost-effectiveness of distribution network loss-reduction measures.

(B) Upgrade distribution networks to ~~improve~~ meet reliability standards.

(C) Make ~~D~~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.

(4) ~~(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~~5) Analysis required for transmission upgrades. ~~The responsibility for planning transmission upgrades is shared between the utility and the Regional Transmission Organization (RTO) it belongs to. 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 in the context of long-term membership in the RTO.

(B) If the utility determines that the RTO transmission expansion plans adequately describe necessary ~~the~~ regional transmission additions over the planning horizon addressed in the RTO transmission expansion plans, the utility may use the RTO plan including:

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 to assess whether~~meet~~ customer needs are being met.

(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:~~ as follows:

~~1. Generator within the RTO footprint. The utility shall assess and reflect in the cost analysis of the generation resource[d1]:~~

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~~6) Analysis required for transmission and distribution network investments to incorporate smart grid technologies.
(A) The utility shall review and assess the RTO transmission expansion plan ~~each year. The utility shall~~ to 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, in the context of long-term membership in the RTO.
(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 (~~7~~4).

(E) Before investing in ~~non-advanced~~ transmission and distribution grid technologies that do not advance smart grid initiatives (non-advanced technologies) the utility shall:

1. Conduct an analysis considering the factors identified in the foregoing subsection (D) which demonstrates that investment in ~~each~~ the 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).

(~~5~~7) 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) 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 in the context of long-term RTO membership;

(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~~ nine 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 in the context of long-term RTO membership and file it with the full compliance filing or annual update filing.

AUTHORITY: sections TBD