**Problem Statement**

**Transparency and Consistency in End of Life Asset Management and Condition Planning**

**Problem / Opportunity Statement**

The electric utility industry is faced with making decisions about transmission assets that have reached the end of their operational lives. In PJM, a good amount of the transmission infrastructure is older than 50 years. Additionally, annual investment in new transmission infrastructure significantly declined from 1982 through 1998 as assets met operational expectations and remained useful. The declining trend was reversed as load continued to grow and utilities responded to regulatory initiatives to foster new investment. With reduced load growth and emerging distributed technologies, certain utility resources are focused on one of the primary drivers for new transmission investment, replacement of aging transmission infrastructure to meet evolving needs. In 2018, a majority of the Baseline and Supplemental Projects proposed had end of life asset condition related drivers. According to PJM data, this was 80.4% of the Supplemental Projects ($4.61B) and 53% of the Transmission Owner (TO) criteria Baseline (FERC Form 715) Projects ($1.5B). 2018 RTEP total proposed spend was $7.8B. Overall, a little over 78% of 2018 proposed projects had end of life asset condition as a driver.

Additionally, there are an unprecedented number of generation interconnection projects in the PJM queue placing further pressure on the need for effective asset management and replacement. Transmission enables the development of all forms and sizes of generation, connecting it with consumers across the PJM region. Queue activity reflects ongoing business decisions by developers in response to changing public policy, regulatory, industry, economic and other competitive factors. Currently, over 50,000 MW of new capacity powered by natural gas is seeking transmission interconnection to participate in PJM capacity and energy markets, much of it from the Marcellus and Utica shale deposits located in the middle of PJM’s geographic region. This is in addition to the more than 74,000 MW already in service. This capacity exceeds that powered by coal, marking an unprecedented shift in PJM’s fuel mix. Additionally, in the future the grid is likely going to have to be able to address increased transmission challenges posed by increased deployment of variable resources such as onshore wind, offshore wind and solar. The large number of Supplemental Projects and the inherent uncertainty surrounding the Supplemental Projects contributes to significant time delays in PJM generation queue retools.

Once PJM Transmission Owners have determined that infrastructure is no longer cost effective to maintain, whether to replace, when to replace, and with what to replace transmission assets at the end of their lives becomes a planning determination. The PJM Transmission Owners have stated that replacing aging infrastructure is a matter of addressing reliability concerns. Additional transparency may help interested parties to understand why such projects and activities are needed. In addition, greater transparency may allow stakeholders to express concerns earlier in the process which could help narrow the scope of disputes brought before FERC. Therefore, this effort is targeted at continuing stakeholder attempts to enhance the processes surrounding the sharing and reviewing of information with interested parties regarding asset management projects and activities. Topics for discussion will include:

However, two essential ingredients are missing today in the PJM end of life planning process:

1. Review of governing FERC Orders.
2. Review of the provisions of the Consolidated Transmission Owners Agreement and the Operating Agreement regarding the legal, contractual rights and obligations of the PJM Transmission Owners.
4. Once the PJM Transmission Owners have determined an asset has reached the point of needing to be replaced, how is that asset’s criticality and relative priority amongst its assets determined; and,

4. Whether the aging facility should be replaced and with what to best meet the infrastructure needs of the next 50 – 100 years?

Bringing these facilities into the normal PJM transmission planning environment will greatly improve certainty, consistency and increase transparency. Some TOs have developed sophisticated systems and procedures to assess aging infrastructure. Based on field inspections, equipment testing, outage history, etc., these TOs utilize a probabilistic approach to identify risk of facility failure and the relative priority this asset has to the rest of its system. These assessments enable the TO to justify making informed decision-making with respect to continued maintenance versus replacement decisions for many years into the future.

Although asset management analysis and decisions of this nature are exclusively within the province of the Transmission Owner and often shared with federal and state regulators, they are not subject to the transmission planning requirements of Order No. 890 and are not shared with the general stakeholder population. To do so would raise significant security as well as economic concerns.

Notwithstanding, all of the stakeholders understand the desire for more transparency and therefore wish to engage in discussion targeted at increasing transparency into these projects and activities. Although this information is readily available, TOs have so far refused to provide the output of aging infrastructure models to stakeholders as part of the M3 process. As such, stakeholders are unable to replicate the results of these planning studies. The hope would be that solutions to aging infrastructure needs are brought forward as Supplemental Projects, these efforts may help interested parties better understand why such projects and activities are needed and how they and their constituencies have and will continue to benefit. Planning is conducted solely by the TO, with PJM conducting a minimalistic ‘do no harm’ assessment only.

Some TOs have memorialized end of life criteria in their FERC Form 715, making this PJM RTEP baseline criteria. While making end of life criteria PJM RTEP baseline criteria avails stakeholders with more information than the M3 process, there is no vetting of the end of life criteria among stakeholders to determine reasonableness or consistency with best practices and there is no existing process to resolve such concerns with Transmission Owner FERC Form 715 criteria.

While the incumbent TO properly plays a major role in the planning for new/replacement facilities in its Zone, the process needs to be broader and more inclusive and the decision-making more transparent. Most importantly, transmission planning for replacement of integrated transmission facilities needs to be part of a regional plan that includes the local plan, to meet the needs of a cohesive network whose expansion and enhancement benefits all users of the grid for the next 50 to 100 years.

Stakeholders need to have more confidence that PJM and the TOs are proposing the most cost-effective transmission solution for the future and that competition is not being unduly thwarted. Development of Operating Agreement Language for PJM end of life criteria, as well as improvements in transparency, consistency and clarity, will provide a significant improvement to, and reduce uncertainty in, the RTEP, including the Local Plan. Operating Agreement language is required to ensure that the entire PJM stakeholder community will have meaningful input into how end of life planning should occur.