Short-Term Reliability Projects

In accordance with Attachment Y, Section I.3, SPP provides the following information:

During the 2015 Integrated Transmission Planning Near-Term (ITPNT) assessment, SPP performed an N-1 AC Contingency Calculation (ACCC) analysis to determine reliability needs utilizing the models developed by SPP through its stakeholder process. The list of all time-sensitive overload and voltage needs (Needs List) can be found on the SPP website. These needs are identified as time-sensitive because a solution is needed within three (3) years to address the needs shown in SPP's models.

To determine the best solution to solve the identified time-sensitive reliability needs, SPP evaluated the proposed solutions which included the solutions submitted through the SPP Detailed Project Proposal (DPP) process, SPP proposed solutions, and solutions proposed by SPP stakeholders through the FERC Order 890 process. SPP tested proposed solutions against every reliability need including the time-sensitive needs identified in the Needs List. Solutions that mitigated more needs were considered for further analysis, while those that solved less needs were eliminated. SPP developed cost estimates for each of the proposed solutions being evaluated. SPP utilized the cost estimates to determine which solutions mitigated the time-sensitive needs at the lowest cost. SPP proposes the following Short-Term Reliability Projects to mitigate the time-sensitive needs identified in the Needs List.

Tap Hitchland – Finney 345 kV and NewSub – Walkemeyer 115 kV

In the 2015 ITPNT, SPP determined that the "Tap Hitchland – Finney 345 kV and NewSub – Walkemeyer 115kV" (the Walkemeyer Transformer Project) was the best solution to mitigate the time-sensitive overload and voltage needs around the Kismet area in Southwest Kansas. The Walkemeyer Transformer Project entails tapping the Hitchland to Finney 345 kV line at a new substation, installing a new 345/115 kV transformer at the new substation, and building a new one-mile line from the new substation to the Walkemeyer 115 kV substation. This project was also selected as part of the 2015 ITP10 final project portfolio. SPP's analysis in the 2015 ITPNT affirmed that this was the best transmission solution to mitigate the 2015 ITPNT needs. Other solutions evaluated included 1) converting Cimarron River Station unit 1 to a synchronous condenser and adding two stages of 12 MVar capacitor banks at Hugoton, 2) tapping Hitchland to Finney 345 kV line and building a new 38.5 mile 115 kV line to Cimarron River Station, and 3) building a new Cimarron to Clark 345kV line, installing a new 345/115 kV

transformer at Cimarron and building a new Cimarron – East Liberal 115 kV line. Analysis showed that some alternatives solved less needs, while others solved the same number of needs but at a higher cost. Other alternatives solved needs in earlier seasons but not in later seasons. Based on this analysis, the Walkemeyer Transformer Project was selected.

The reliability needs addressed by the Walkemeyer Transformer Project solution are related to the dispatch of generation in the area. In previous ITPNT assessments, the Cimarron generators were dispatched at varying levels; however, in the 2015 ITPNT assessment the Cimarron generators were turned off. In accordance with Section 5.5.1 of the ITP Manual[1], Sunflower Electric Power Corporation (Sunflower) changed the placement of the Cimarron River Station in its dispatch order because other less expensive generation was available to be dispatched to meet Sunflower's load obligations. As a result of Sunflower's change in the dispatch order, the Cimarron units were not dispatched in any of the 2015 ITPNT models which resulted in many new needs being identified around the Kismet area in Southwest Kansas area as early as June 1, 2015.

Baldwin Creek 230/115 kV Transformer

In the 2015 ITPNT, SPP determined that the "Baldwin Creek 230/115 kV Transformer" (the Baldwin Creek Project), which entails tapping the Lawrence Hill - Swissvale 230 kV line into Baldwin Creek substation and adding a 230/115 kV transformer at Baldwin Creek, was the best solution to mitigate the time-sensitive overload of the Lawrence Hill 230/115 kV transformer.

Other solutions evaluated included 1) the addition of a second 230/115 kV transformer at Lawrence Hill which would have required extensive expansion of the substation and facilities near Lawrence Energy Center and 2) upgrading the 115 kV terminal equipment at Lawrence Hill to increase the transformer rating. Analysis showed that some alternatives solved less needs, while others solved the same number of needs but at a higher cost. Other alternatives solved needs in earlier seasons but not in later seasons.

The reliability needs addressed by this project are related to the overload of the Lawrence Hill 230/115 kV transformer. In the 2014 ITPNT, the Lawrence Hill transformer was 97% loaded but was not identified as a need because the facility was not loaded over 100%. However, in the 2015 ITPNT, the Lawrence Hill transformer was loaded 111%. This is due to

[1] Section 5.5.1 of the ITP Manual provides that the process of developing the order of generation dispatch in these models is led by the Transmission Owner except in the case of Independent Power Producer generation. The ITP Manual can be found on the SPP website.

load growth at Lawrence Hill of about 4.4 MW that was not included in the previous ITPNT assessment. This overload of the Lawrence Hill 230/115 kV transformer occurred in the 2020 summer peak model. As a result, SPP performed a linear interpolation between the 2016 and 2020 summer models to approximate when the overload first appeared. SPP determined that the overload would occur in summer 2017.

RIAC 115 kV Voltage Conversion

In the 2015 ITPNT, SPP determined that the "RIAC 115 kV Voltage Conversion" (the RIAC Project) was the best solution to mitigate the time-sensitive overload of the first Roswell Interchange 115/69 kV transformer for the loss of the second. The RIAC Project entails converting the RIAC substation from 69 kV to 115 kV, installing a new 3-way 115 kV line switch that taps the Roswell Interchange to Brasher 115 kV line, wreckout of the existing 69 kV transmission lines to the RIAC substation, rebuilding the 69 kV line from the north with a new 115 kV line to RIAC, installing a new breaker terminal at Roswell Interchange, and building a new 0.1 mile 115 kV line out of Roswell Interchange to Roswell 115 kV. Other solutions evaluated included 1) upgrading the first Roswell 115/69 kV transformer to attain a higher rating and 2) turning off one of the capacitor banks at Roswell Interchange to reduce Var flow through the transformer. Analysis showed that some alternatives solved less needs, while others solved the same number of needs but at a higher cost. Other alternatives solved needs in earlier seasons but not in later seasons.

The reliability needs addresses by the RIAC Project are related to the Roswell Interchange transformer. In the 2013 ITPNT and 2014 ITPNT assessments, the Roswell Interchange transformer was loaded at 98.9% and 100% respectively, but was not identified as a need in those studies because the facility was not loaded over 100%. However, in the 2015 ITPNT, the Roswell Interchange transformer was loaded at 105.6%. This is due to load growth in the local area including the following stations: RIAC, Urton, Dexter, Capitan, Brasher, Samson, Roswell City, and Price of which comprised an aggregate of 10 MW that was not part of the previous ITPNT assessments. In the 2015 ITPNT, the overload of the Roswell Interchange 115/69 kV transformer occurred in the 2015, 2016, and 2020 summer peak models.