APPENDIX 2

Description of Integrated Regional Resource Planning (IRRP) Process

Description

- IRRP is a comprehensive planning process for developing and selecting integrated solutions to address the electricity needs of regions in the near-, mid-, and long-term.

- This process is coordinated by the OPA, in collaboration with local distribution companies (LDCs), the Independent Electricity System Operator (IESO), Transmitter(s), and other parties as required. As appropriate and in particular, when expansion of major infrastructure is contemplated, the process intends to engage key stakeholders, elected representatives and communities, in the development of a recommended plan.

Information/Input Required (as appropriate for specific studies)

LDCs

- Unbundled gross demand forecasts by sub-areas, pockets, TSs, etc
- Relevant investment plans
- Future station requirements
- Relevant community energy plans
- Conservation plans

IESO

- Reliability standards
- Power System Simulator for Engineering (PSS/E) loadflow base cases if available

Transmitter(s)

- Transmission facility ratings
- Relevant investment plans
- Reliability statistics of equipment and delivery points
- Equipment end-of-life information
- Direct connect customer demand information

- Transmission option feasibility, timelines and cost estimates

OPA

- Historical electricity demand from the IESO, LDC, Transmitter and other sources
- Existing conservation achievement
- Existing and contracted generation resources (large and small)
- Long-term regional demand forecast (end-use modelling)
- Conservation forecasts
- Distributed generation forecasts
- System resource needs
- Government policy directions
- Incremental conservation potential and associated costs
- Incremental generation potential and associated costs

Process Steps

1. Preparation of detailed unbundled load forecasts
    - Historical coincident peak demand information provided by the OPA
    - Gross peak demand forecasts prepared by area LDCs (median weather conditions) and aligned with medium- and longer-term OPA forecasts as appropriate
    - Conservation and distributed generation forecasts prepared by the OPA with assistance from the LDCs
    - Compilation of LDC and OPA forecasts to produce a net demand forecast by TSs
    - Adjustments made for extreme weather conditions
    - Net demand forecast sensitivities prepared reflecting both higher and lower growth scenarios

2. Detailed technical studies and analysis
    - Load flow and other system analysis to determine the load meeting capability of the existing system; consideration of bulk system developments, changes, constraints and requirements.
    - Analysis of the security of supply and the impact of supply interruptions to customers in the local areas in consideration of the ORTAC criteria
    - Analysis of reliability performance of certain supply pockets, as appropriate
    - Consideration of end-of-life replacement needs of existing infrastructure

- Consideration of generation connection needs
- Consideration of prevailing operating constraints and mitigation
- Consideration of short-circuit and reactive support requirements
- Consideration of distribution system capabilities (eg. feeder back-up) and limitations

3. Establish needs
    - Near-, mid-, and long-term needs established based on above technical study results, updated demand forecasts and system requirements, as appropriate.

4. Development of the solution options
    - Potential options to meet the near- and longer-term needs are identified including conservation, generation (large and small scale), and representative wire options
    - Details of each option are established suitable to allow for comparison, for example:
        - generation options: generation type, size, operating characteristics, location, fuel cost, heat rate, asset life, etc.
        - wires options: voltage, ampacity, distance, capital cost, high level routing, etc. as provided primarily by the transmitter and/or distributor

5. Option screening
    - High level screening of options based on factors such as feasibility and cost comparisons (including net present value, cross-over point and initial capital considerations)

6. Alternative development and screening
    - Remaining options are integrated to create comprehensive alternatives (ie., packages of integrated solution options) to address the near- and longer-term needs
    - High level screening of alternatives based on factors such as feasibility and cost comparisons (including net present value, cross-over point and initial capital considerations)in order to identify the best set of options to take forward

7. Stakeholder engagement
    - Stakeholder feedback is sought on need, and range of and preference for various integrated solution options

8. Alternative evaluation
    - Alternatives are evaluated based on cost comparisons (including net present value, cross-over point and initial capital considerations), flexibility, reliability and technical performance, environmental performance, and societal acceptance

9. Recommendations and Implementation
    - Choice is made regarding the preferred alternative for meeting the area's needs
    - An implementation and monitoring plan is developed, including identification of opportunities for coordination with other infrastructure (e.g. highway corridors) as appropriate

Deliverables

- "Recommendation/Urge letter(s)" to the appropriate transmitter for the implementation of near-term wire options through the RIP process
    - Includes a discussion of the scope, timing and expected project cost
- IRRP report identifying the action plan for the region and any recommended wire options for development through the RIP process
- Monitoring and Re-Direction (Plan B) strategies

Risk

- Demand forecast risk– differences in electricity demand growth, conservation or distributed generation achievement compared to the forecast
- Cost allocation
- Policy changes
- Project cost changes
- Generation contracting risk
- Process timing – e.g. stakeholder engagement
- Risk mitigations as part of the plan (eg. off-ramps, triggers and plan "B")