



Eastern Interconnection Planning Collaborative

Update on EIPC Studies 2013-2014

Update from Sep Presentation – Slide 16

ATC Stakeholder Meeting

September, 2013

Outline

- EIPC Background
- EIPC Activities (grant and non-grant)
- EIPC/DOE Eastern Interconnection Study
 - Phase II Results
- EIPC 2013-2014 Work
 - Selected ATC Projects
- Key Dates
- Appendix

About the EIPC

- Eastern Interconnection Planning Collaborative (EIPC)
- 25 Planning Authority (Planning Coordinator) members including ISOs/RTOs, non-ISO regions, integrated utilities, municipals, and cooperatives
- Members are from the U.S. and Canada
- Approximately 95% of the Eastern Interconnection customers covered
- Formed in the Spring of 2009

EIPC Activities

1. DOE Interconnection Studies Grant

- ARRA funded
- EIPC selected in fall of 2009
- Phase I and Phase II analysis and draft reports complete
- DOE requested Study continue into 2015 to address gas-electric coordination
 - Six Planning Coordinators involved: NYISO, ISO-NE, PJM, MISO, TVA, IESO

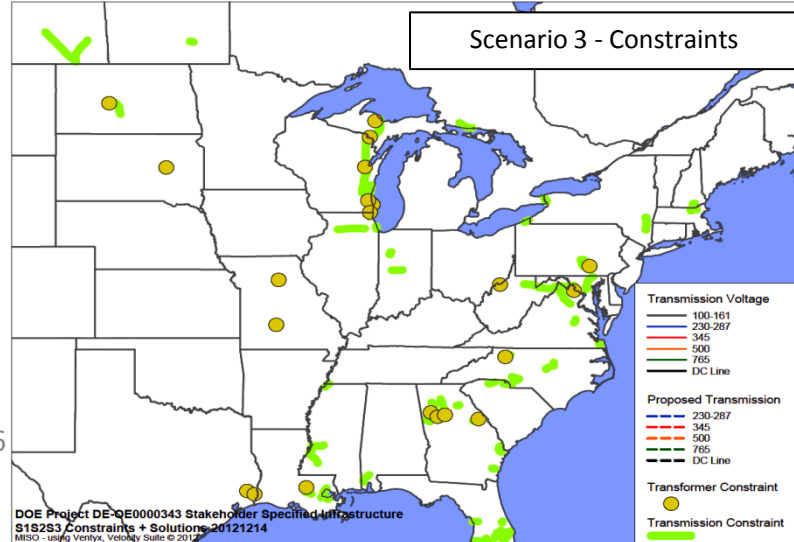
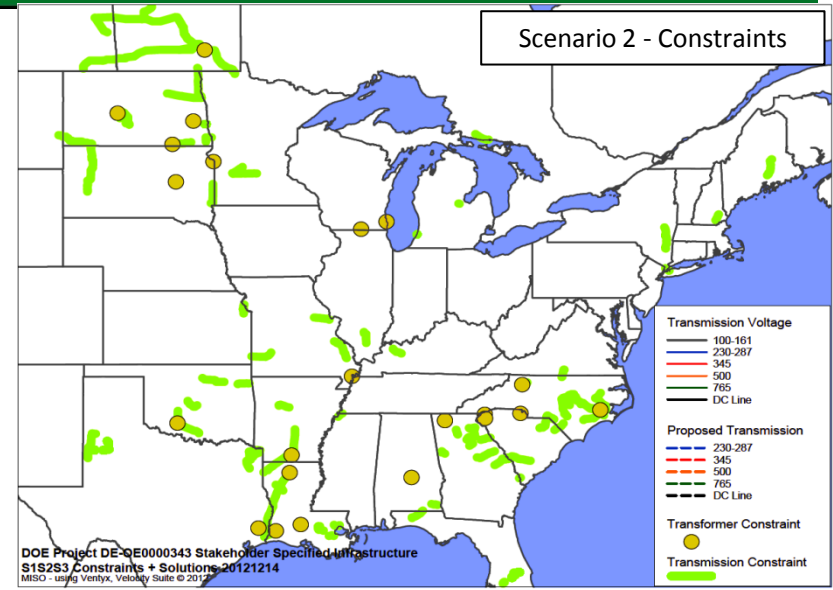
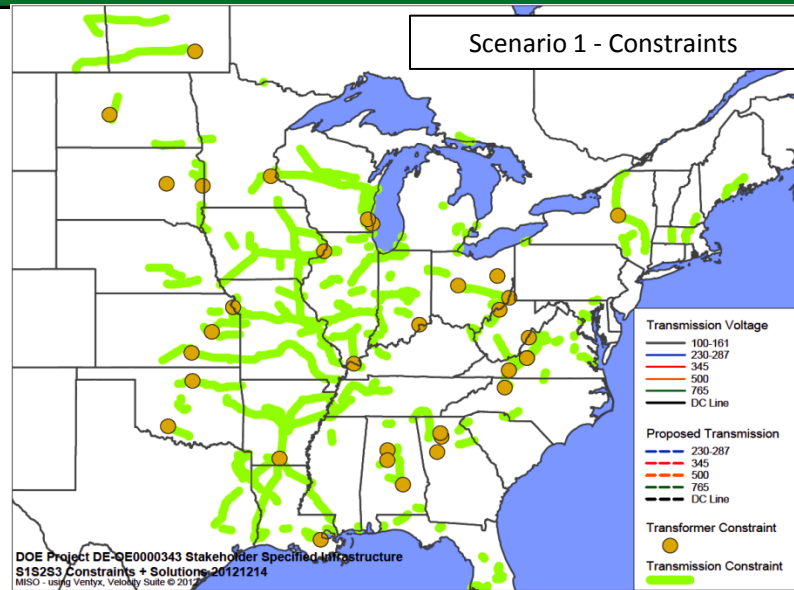
2. EIPC Transmission Analysis (non-grant)

- Funded by EIPC members

EIPC/DOE Eastern Interconnection Study

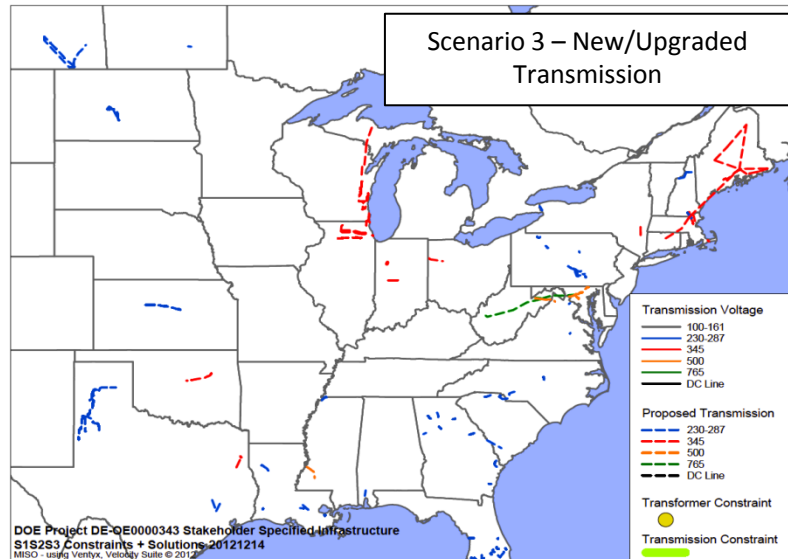
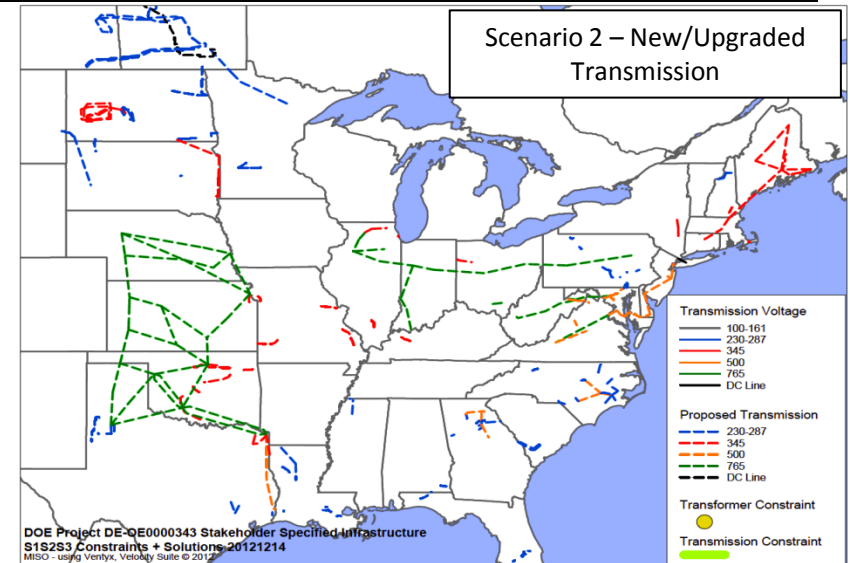
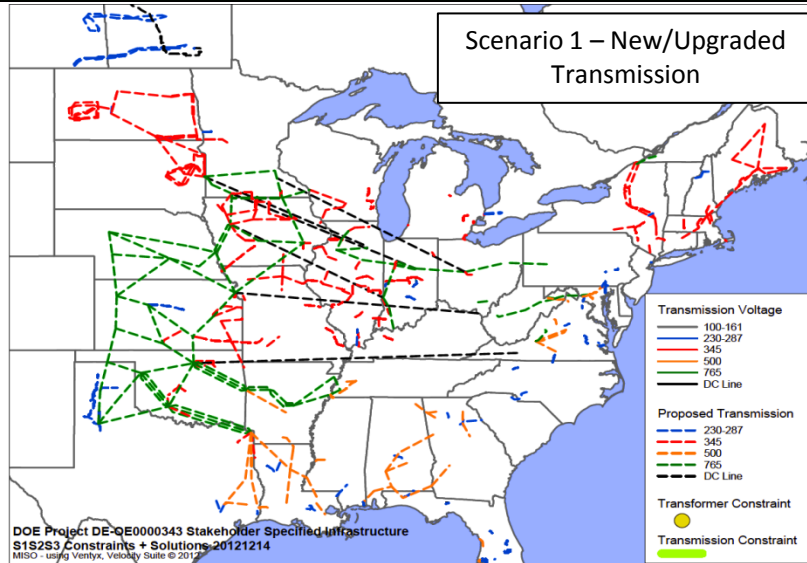
- Phase I
 - Macroeconomic, resource analysis of 80 stakeholder-defined futures/sensitivities
 - Three scenarios chosen for further analysis
 - Scenario 1 – Combined Policies (CO2 reduction, aggressive EE, DR, DG)
 - Scenario 2 – 30% National RPS, Implemented Regionally
 - Scenario 3 – BAU including 2011 proposed EPA regulations
- Phase II
 - Transmission buildouts for three scenarios based on reliability criteria
 - Production cost analysis, including sensitivities
 - Costs estimated for generation, transmission development for each scenario
 - Draft report sent to DOE and posted 4Q 2012

Phase II Results: Reliability Analysis (1)



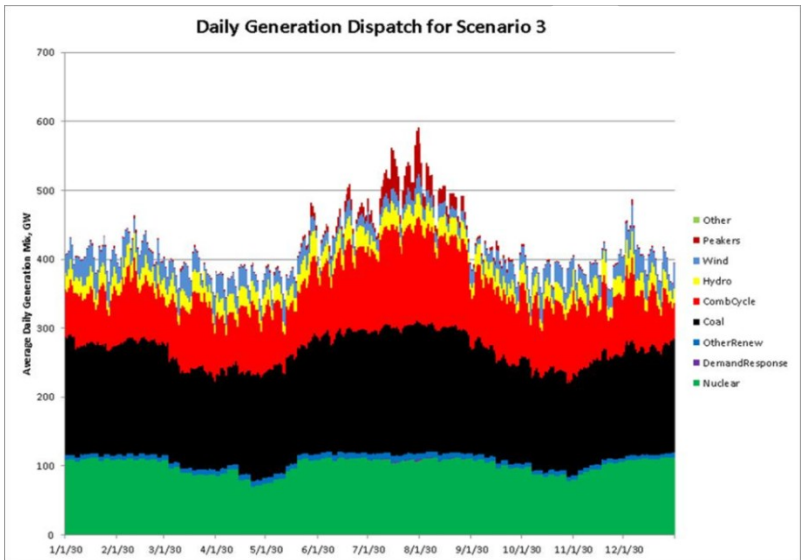
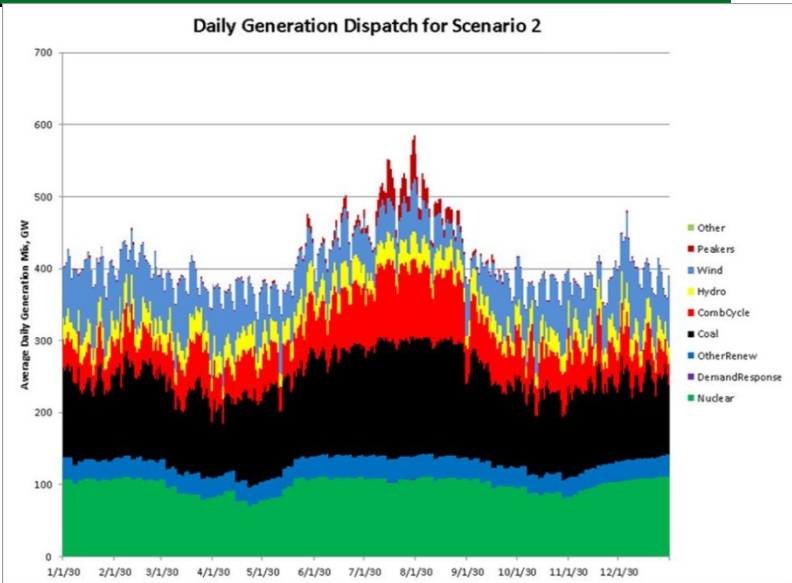
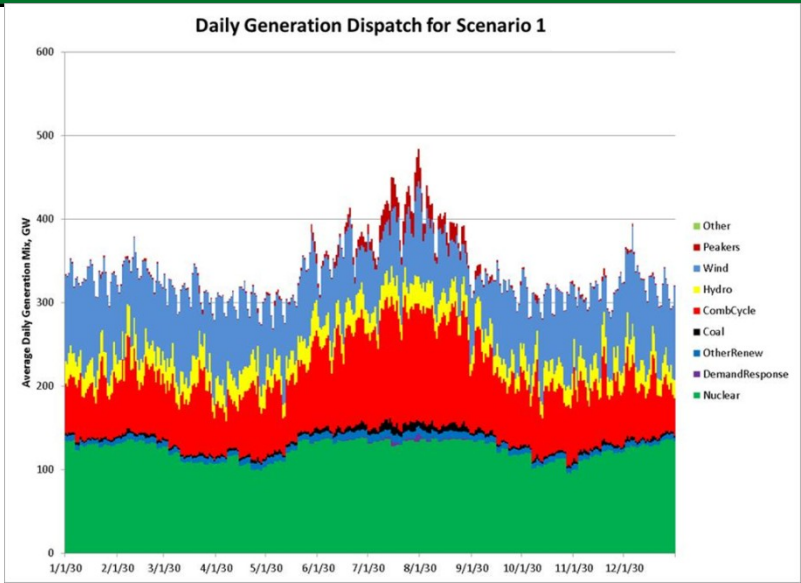
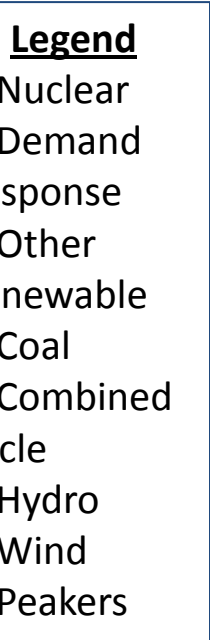
- NERC analysis: N-1 (G&T), common tower, bus outages
- Many more constraints in S1 versus S2 and S3

Phase II Results: Reliability Analysis (2)



- As with the constraint results, in S1 the number of new and reconducted/ upgraded lines is significantly higher

Phase 2 Results: Production Costs (1)



- Hourly dispatch shows amount of energy from different sources each hour

Phase 2 Results: Production Costs (2)

- Production costs with CO2 costs added are very similar; without CO2 S1 production costs are about ½ of S2 and S3
- Emissions, as expected, are significantly lower than S2 or S3, ranging from 1% to 26% of emissions, depending on scenario and type of emissions

| Production Costs (\$M) | | | |
|------------------------|------------------------------------|--------------------------------------|------------------------------------|
| | Scenario 1 Combined Policies | Scenario 2 Nat'l RPS, Regional | Scenario 3 Business As Usual |
| Fuel | 40,802 | 73,789 | 85,057 |
| Variable O&M | 6,430 | 15,502 | 18,411 |
| Total | 47,231 | 89,291 | 103,469 |
| CO2 Penalty Costs | 45,340 | 126 | 154 |
| Total w/ CO2 | 92,571 | 89,416 | 103,622 |

| Emissions (short tons) | | | |
|------------------------|------------------------------------|--------------------------------------|------------------------------------|
| | Scenario 1 Combined Policies | Scenario 2 Nat'l RPS, Regional | Scenario 3 Business As Usual |
| SO2 (000s) | 93 | 873 | 1,122 |
| NOx (000s) | 21 | 1,300 | 1,771 |
| CO2 (millions) | 358 | 1,391 | 1,792 |

Draft report available at:

<http://www.eipconline.com/Phase II Documents.html>

Continuing EIPC Activities

1. DOE Interconnection Studies Grant
 - ARRA funded
 - EIPC selected in fall of 2009
 - Phase I and Phase II analysis and draft reports complete
 - DOE requested Study continue into 2015 to address gas-electric coordination
 - Six Planning Coordinators involved: NYISO, ISO-NE, PJM, MISO, TVA, IESO
2. EIPC Model Development and Analysis (non-grant)
 - funded by EIPC members

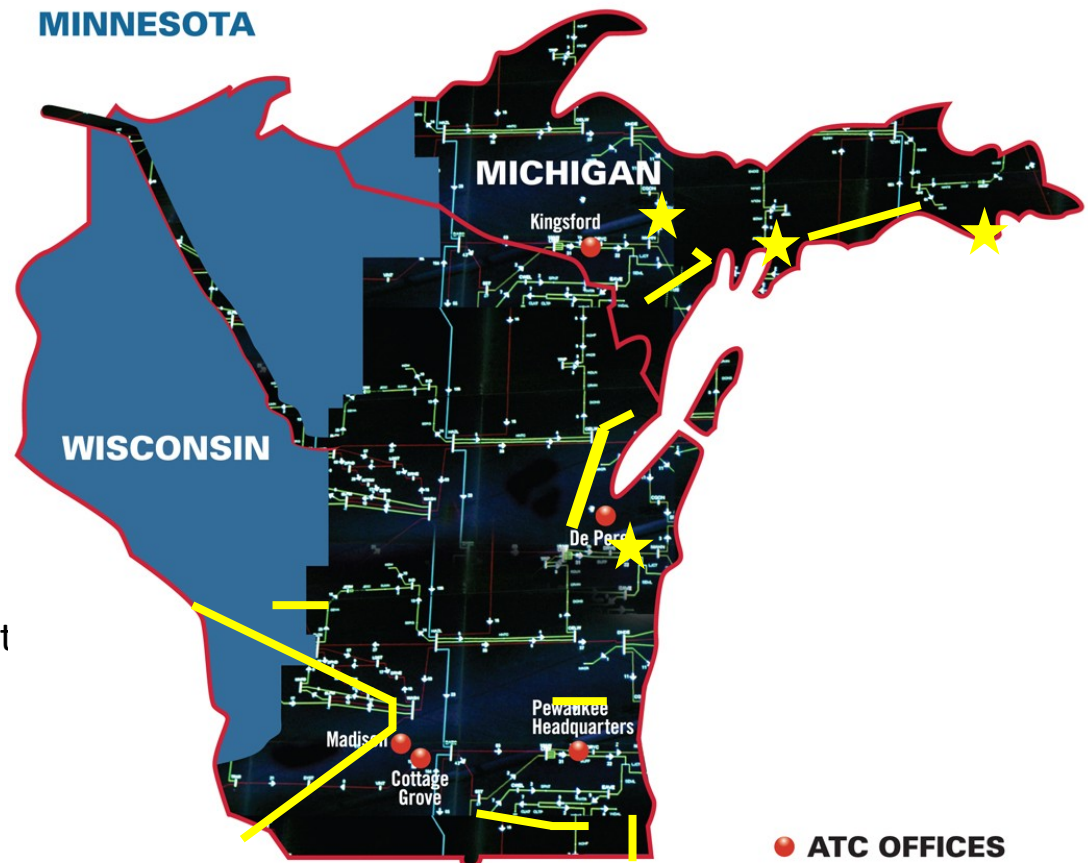
Remainder of presentation focuses on activity #2

2013-2014 EIPC Activities (non-grant)

- Roll-up analysis of the PA's plans to find possible changes that will improve their efficiency and effectiveness
- Result of this analysis available for consideration in regional and inter-regional planning processes
- Perform a defined number of scenarios/sensitivities against the rolled-up model

Select ATC Projects Included in Cases

- Indian Lake-Hiawatha 138kV
- Mackinac Back-to-back HVDC
- Chandler-Old Mead Rd 138kV
- K-115 69kV to 138kV conversion
- Monroe County-Council Creek 161kV
- Arnold 345/138kV Transformer
- Arcadian-Waukesha 138kV Ckt 1&2 reconductor
- Holmes-Old Mead Rd 138kV
- North Appleton-Morgan 345kV
- North Appleton-Morgan 138kV
- Morgan-Stiles 138kV split into 2 circuit
- Branch River 345kV SS
- Badger Coulee 345kV
- Cardinal Bluffs 345kV
- Bain-Spring Valley-Lake Geneva 138kV
- Pleasant Prairie – Zion 345kV



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EIPC Work to Date

- 2013 – Model roll-up and evaluation by Planning Coordinators
 - Using existing plans of Planning Coordinators
 - Model years 2018, 2023
 - Modeling increased transfers to test robustness of plans, identify gaps
- Developed new stakeholder process
 - Regional basis, similar to Order 890 processes
 - Will have Eastern Interconnection-wide webinars and, if needed, face to face meetings
- Scenario development
 - Reviewing internal list of proposed scenarios
 - Published “Guidelines and Principles” document
 - [http://www.eipconline.com/uploads/Guidelines and Principles for EIP C Stakeholder Scenario Development 080813.pdf](http://www.eipconline.com/uploads/Guidelines_and_Principles_for_EIP_C_Stakeholder_Scenario_Development_080813.pdf)

What We're Asking of Stakeholders

- Participate in the EIPC portion of regional processes and meetings
- Provide feedback on the roll-up models and results, the potential scenarios developed by the PAs, and any other scenarios that stakeholders suggest be studied
- Work with other stakeholders in determining which scenarios would be of most value
- Participate in interconnection-wide webinars (and meetings, if necessary) to provide input on the interim results, draft conclusions, and recommendations.

Requested Feedback on Following

- When and how would stakeholders like to hear from the EIPC on the status of EIPC work?
- Do stakeholders want a separate set of EI-wide calls/webexes?
 - What is the best use of EI-wide web meetings?
- How often would stakeholders like to be updated on EIPC work?
- Would stakeholders want the capability to provide input via an EIPC “mail box” in addition to input via their regional process?
- What would you like to get from EIPC studies?
- How much time do people need to be able to provide comments once material is shared with them? Two days, 2 weeks, 1 month?

Key Dates - **Updated**

- October 18: would like stakeholder feedback on Guidelines and Principles document
- October 25 – Nov 1: distribute draft report on roll-up cases, contingency results and transfer testing
- **New Date - Dec 6, 8:30 a.m. CT: EIPC Webinar on possible scenarios & roll-up case report**
- Nov 29: Post revisions to Guidelines and Principles document, if any

Questions and Discussion

For more information:

Flora Flygt

fflygt@atcllc.com

608-877-3660



Planning Coordinator Members of EIPC

- Alcoa Power Generating
- American Transmission Co.*
- Duke Energy Carolinas
- Electric Energy Inc.
- Entergy *
- Florida Power & Light
- Georgia Transmission Corp.
- IESO *
- International Transmission Co.
- ISO-New England *
- JEA
- LG&E/KU
- MAPPCOR *
- Midwest ISO *
- Municipal Electric Authority of Georgia
- New York ISO *
- PJM Interconnection *
- PowerSouth Energy Coop.
- Progress Energy – Carolinas
- Progress Energy – Florida
- South Carolina Electric & Gas
- Santee Cooper
- Southern Company *
- Southwest Power Pool
- Tennessee Valley Authority *

*Primary participants on portions of the DOE funded project.

Stakeholder Process Overview

- Stakeholder process for EIPC Roll-up (not funded by DOE)
- Existing stakeholder groups previously created for other purposes such as compliance with FERC Order 890 will be used to facilitate stakeholder input
- Ensure a regional focus:
 - Present roll-up models and results
 - Receive stakeholder feedback, input, comments and suggestions on specific scenarios to be studied
 - Present the results of scenario studies
 - Seek stakeholder feedback on reports that are created

Stakeholder Process Overview (cont'd)

- EIPC plans to hold two to three interconnection-wide stakeholder webinars each year
- Objectives of the webinars: provide transparency and coordination between the regions and seek additional stakeholder input
- Webinars will be open to all stakeholders including federal and state (EISPC) representatives
- If necessary, interconnection-wide in-person stakeholder meetings could be held in place of or in addition to the webinars