



Eastern Interconnection Planning Collaborative

Interconnection-Wide Planning in the Eastern Interconnection – Status Update

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Looking Back to Spring 2010

- EIPC had formed, DOE funding of EIPC and EISPC had been announced, project Tasks set
- But ...
 - No contract has been signed with DOE
 - The stakeholder process had not taken shape
 - The studies had not started
 - There were multiple unknowns on how stakeholders might be able to come together to determine inputs to the effort

We have come a long way ...

- The stakeholder process is functioning in a robust and active manner
 - Consensus based
 - Active and intense dialog
- An excellent working relationship has been established between the EISPC and EIPC
- Phase I analysis is complete
- Final 3 Scenarios have been selected
- Draft #4 of the Phase I Report has been distributed
- The final Phase I Report is to be submitted to DOE by mid-December
- Preparation for Phase II is underway

Phase I: 8 Resource Expansion Futures*

1. “Business as Usual”
 - This Future assumes that present trends continue into the future based on historical indices
2. Federal Carbon Constraint: National Implementation
3. Federal Carbon Constraint: Regional Implementation
4. Aggressive Energy Efficiency, Demand Response, Distributed Generation and Smart Grid
5. National RPS: National Implementation (top down)
6. National RPS: State and Regional Implementation
7. Nuclear Resurgence
8. Combined Federal Climate and Energy Policy Future

* A total of 80 cases were analyzed—including all sensitivities

Phase II – 3 Scenarios

1. “Business As Usual”

- Includes EPA “non-carbon” regulations & existing state RPS and EE programs
- No new policies or regulations on carbon, no new RPS, no new EPA regulations [F1S17]

2. “National RPS- Regional Implementation”

- Regionally Implemented 30% National RPS [F6S10]

3. “Combined Federal Climate and Energy Policy”

- National carbon constraint with 42% reduction in 2030 and 80% in 2050, 30% national RPS, increased Energy Efficiency/Demand Response/Distributed Generation/SmartGrid [F8S7]

Installed 2030 EI Capacity by Type: 3 Scenarios

- Regional approach to RPS in F6S10 leads to:
 - Fewer CCs
 - More on-shore and off-shore wind
 - More other renewables
- CO₂ pricing in F8S7 leads to:
 - Reduced coal and steam oil/gas
 - Increased nuclear
 - Increased on-shore wind

Installed 2030 EI Capacity by Type: 3 Scenarios

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		Installed Capacity in 2030		
		F1S17	F6S10	F8S7
	Total	BAU	Hard	Flat
	2010	Base	Limit	CO2
Coal	272	199	178	10
Nuclear	100	105	105	134
CC	133	202	157	208
CT	120	132	134	66
Steam Oil/Gas	75	36	38	4
Hydro	45	45	52	50
On-Shore Wind	19	68	159	261
Off-Shore Wind	0	2	38	2
Other Renewable	4	14	37	12
New HQ/Maritimes	0	0	1	5
Other	17	17	17	17
Total w/o DR	783	818	916	770
DR	33	71	71	152
Total w/DR	816	889	987	923

Installed 2030 Capacity by Region

	New Builds			New CCs			New On-Sh Wind			Coal Retire		
	F1S17	F6S10	F8S7	F1S17	F6S10	F8S7	F1S17	F6S10	F8S7	F1S17	F6S10	F8S7
	BAU Base	Hard Limit	Flat CO2	BAU Base	Hard Limit	Flat CO2	BAU Base	Hard Limit	Flat CO2	BAU Base	Hard Limit	Flat CO2
ENT	4	2	4	3	1	3	0	0	0	1	1	8
FRCC	16	9	31	13	4	11	0	0	0	1	1	9
IESO	5	5	5	1	1	1	2	2	2	6	6	6
MAPP_CA	2	5	4	2	0	0	0	0	0	1	2	2
MAPP_US	2	7	9	0	0	0	1	6	9	1	1	4
MISO_IN	5	1	20	3	0	8	0	0	11	1	1	15
MISO_MI	4	3	14	0	0	5	3	2	9	4	4	11
MISO_MO-IL	3	3	20	0	0	5	0	0	13	2	2	14
MISO_W	10	18	71	0	0	4	9	18	68	3	3	13
MISO_WUMS	6	14	8	4	0	4	1	1	3	3	3	8
NE	1	3	16	0	0	0	0	2	16	0	0	3
NEISO	9	8	9	2	2	2	5	4	5	3	3	3
NonRTO_Mid	1	1	6	1	0	6	0	0	0	1	2	10
NYISO_A-F	4	4	7	1	1	1	4	3	6	2	2	2
NYISO_G-I	1	0	0	1	0	0	0	0	0	0	0	0
NYISO_J-K	3	3	1	1	1	1	0	0	0	0	0	0
PJM_E	7	16	7	5	5	5	1	1	1	3	4	4
PJM_ROM	12	14	6	2	2	2	7	7	1	8	11	16
PJM_ROR	20	61	37	8	3	22	9	54	12	20	25	60
SOCO	10	14	21	8	5	12	0	0	0	9	11	25
SPP_N	3	11	42	2	0	0	0	11	42	0	1	8
SPP_S	7	26	43	2	0	0	3	24	41	2	2	13
TVA	8	10	8	4	1	6	0	0	0	5	6	15
VACAR	20	48	25	11	3	11	4	4	4	6	11	20
	165	286	416	75	30	108	49	141	243	82	102	270

2030 Energy Sources: 3 Scenarios

- El generation as a percent of demand, El energy demand , and El CO₂ emissions are shown below for 2030

	BAU	Reg RPS	Nat'l CO2
	F1S17	F6S10	F8S7
CC	25%	13%	26%
Coal	38%	33%	0%
Nuclear	22%	23%	35%
On-Shore Wind	5%	13%	27%
Off-Shore Wind	0%	4%	0%
Hydro	5%	6%	8%
Total	96%	91%	96%
Demand (TWh)	3702	3609	3008
<i>Change from BAU</i>		-3%	-19%
CO2 (MilMetricTons)	1716	1316	264
<i>Change from BAU</i>		-23%	-85%

High Level Transmission Cost Estimates

- Estimates of cost for increased inter-regional transmission capability provided by PAs
- Building block approach

Case	Total Miles of Transmission	Cost Estimate Range (\$ billion)	
		Low End	High End
Future 2	10,757	34.1	48.8
Future 3	1,171	1.7	2.7
Future 5	13,613	39.2	58.3
Future 6*	650	2.1	3.1
Future 8**	11,648	36.7	51.1

Phase II – Focus on Transmission Analysis

- Phase II is scheduled to begin in January 2012
- 3 Scenarios chosen by stakeholders will be analyzed:
 - The study year will be 2030
 - Transmission facilities will be added as required to meet reliability standards
 - Focus on 230kV and above
 - Consider both HVAC and HVDC solutions
 - Includes a production cost run for each scenario
 - Includes a high level estimate of the costs for generation and transmission expansion for each scenario
- Phase II scheduled for completion by the end of 2012

Questions and Discussion

