



Southwest Power Pool
ECONOMIC STUDIES WORKING GROUP
October 2, 2013
Web Conference

• SUMMARY OF ACTIONS TAKEN •

1. SPP Staff will post the spreadsheet including the base load unit reductions for Future 2.
2. SPP Staff will add a new column to the Post-Approval edits tab (check 4b. 20131002 2015 ITP10 Resource Plan Reference.xlsx in the background materials) showing who suggested the resource plan modifications.
3. The new deadline to submit Resource Plan feedback is 12PM October 7th, SPP Staff will seek for approval by October 10th.



**Southwest Power Pool
ECONOMIC STUDIES WORKING GROUP**

**October 2, 2013
Web Conference**

• MINUTES •

Agenda Item 1 – Administrative Items

Agenda Item 1a - Call to Order, Introductions

Chair Alan Myers (ITC Great Plains, LLC) called the meeting of the Economic Studies Working Group (ESWG) to order at 9:03 a.m., welcomed those in attendance, and asked for introductions. (Attachment 1 – Attendance List)

There were 39 web conference participants representing 10 of 12 members.

Agenda Item 1b – Receipt of Proxies

Juliano Freitas (SPP staff) requested proxy statements. One proxy was identified, Kip Fox proxy to Wayman Smith (AEP) for the last 2 hours of the meeting. (Attachment 2 – Proxy)

Agenda Item 1c – Review of Agenda

Chair Alan Myers (ITC Great Plains, LLC) presented the agenda for review and asked for any additions or corrections. The agenda was approved unanimously. (Attachment 3 – Agenda)

Agenda Item 2 – 2015 ITP10 Schedule

Antoine Lucas (SPP staff) presented the 2015 ITP10 schedule including milestones, member review/feedback and also the ESWG approval dates. The intention of this presentation was to show members the impact of the Resource Planning milestone on the 2015 ITP10 Study schedule. The ESWG members approved moving the Siting Plan approval from October 24th to the end of the month, day to be decided at the October 10th meeting. (Attachment 4 – 2015 ITP10 Schedule)

Agenda Item 3 – 2015 ITP10 Scope

Kelsey Allen (SPP Staff) presented and asked members to approve the 2015 ITP10 Scope. Based on ESWG member feedback, primarily related to economic seams projects and the calculation methodology of benefit metrics, SPP Staff received a request to modify two items:

- 1) Solutions Development (Page 20): the following language was added, “To the extent remedies are recommended as a result of the Regional Cost Allocation Review, project remedies will be evaluated as part of the 2015 ITP10 analysis as appropriate”.
- 2) Benefit Metric Development and Usage (Page 23): the following language was added, “To the extent that any adjustments or changes to these Benefit Metrics are recommended by the Regional Allocation Review Task Force (RARTF), these changes will be considered by ESWG”.

A motion to approve the 2015 ITP10 Scope was made by Tim Owens (NPPD) and seconded by Randy Collier (City Utility of Springfield). The motion was approved unanimously.

Agenda Item 4 – 2015 ITP10 Resource Plan

Juliano Freitas and Kelsey Allen (SPP Staff) presented the 2015 ITP10 Resource Plan results. The presentation was divided in two parts: Renewable and Conventional Resource Plan. The Renewable Resource Plan is based on the 2015 Policy Survey approved by the ESWG on 08/20/2013; the plan was developed to address unmet renewable policy survey requirements. The Conventional Resource Plan is

based on the 2015 Load and Generation Review as well the Renewable Resource Plan. The Conventional Resource Plan was developed to address the zonal capacity margin requirement of 12%. The alternatives to meet the Conventional Resource Plan requirements are based on the EIA 2013 Prototypes, with an exception for wind. The wind prototype was modified per ESWG request to reflect more appropriate capital and fixed O&M costs. Also, PTCs are included in the calculation, but phased out over a ten year period by beginning at a value of 100% in 2015 and gradually reduced by 10% of the original value annually until completely removed in 2024. The final results are in the Attachment 6. ~~The main concern with the results was that the Future 3 results included two scrubbed coal units at 1.3GW each. The main concern with the results was that the Future 3 results included two scrubbed coal units without CCS at 1.3GW each~~ According to members, this technology will not be feasible in the future due to regulatory pressures and asked SPP Staff to not consider this prototype as an option. Members asked for more time to review the results and provide feedback. The new deadline to submit feedback is 12PM October 7th. SPP Staff will seek approval by October 10th. (Attachment 5 – 2015 ITP10 Resource Plan)

A motion to approve the changes made in the 2015 Policy Survey was made by Greg Sweet (EMDE) and seconded by Randy Collier (City Utility of Springfield). The motion was approved unanimously.

Stakeholders requested more information regarding the base load unit reductions in order to have more details about the specific units being affected.

ACTION ITEM: SPP Staff will post the spreadsheet including the base load unit reductions for Future 2

Also, stakeholders asked for SPP Staff to document all the changes requested by members in order to create a list of actions related to base load unit reductions.

ACTION ITEM: SPP Staff will add a new column to the Post-Approval edits tab (check 4b. 20131002 2015 ITP10 Resource Plan Reference.xlsx in the background materials) showing who suggested the resource plan modifications

Agenda Item 5 – HPILS Economic Load Assumptions

SPP Staff asked ESWG members to review the load factor proposed for the incremental loads. Originally the load factor for incremental loads without a load shape provided by members was 100%. **A decision point was made, for any member that did not supply a load factor or load shape with their submission of HPILS loads through the ITP10 HPILS data request, SPP will utilize a 90% load factor and a generic shape that assumes a drop off of demand 840 hours out of the year, roughly weekend nights.**

Closing Items

Chair Alan Myers (ITC Great Plains, LLC) requested if any other items merited discussion.

The meeting was adjourned at 12:14 p.m.

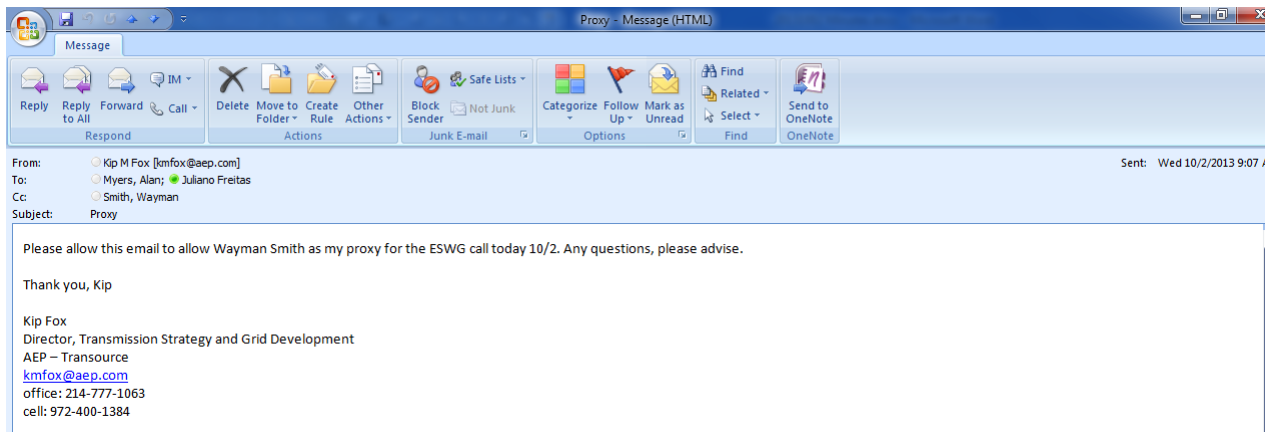
Respectfully Submitted,

Juliano Freitas,

Secretary

NAME	ATTENDANCE
Alan Myers	Webex
Antoine Lucas (SPP)	Webex
Bennie Weeks	Webex
Bill Leung (NPRB)	Webex
Bob Burner	Webex
Bruce Walkup (AECC)	Webex
Dan Lenihan	Webex
Deral Danis (Clean Line)	Webex
Greg Sweet (EDE)	Webex
Jeff Knottek - SPRM	Webex
Jenell Katheiser	Webex
Jeremy Harris (WERE)	Webex
Jerry Bradshaw (CUS)	Webex
Jim Jacoby - AEP	Webex
John Mayhan (OPPD)	Webex
Jon Shipman (OPPD)	Webex
Josh Ross (SPP)	Webex
Juliano Freitas (SPP)	Webex
Kelsey Allen (SPP)	Webex
Kip Fox	Phone
Kirk Hall	Webex
Kurt Stradley (LES)	Webex
Leon Howell	Webex
Liz Coffield	Webex
Matt Lind	Webex
Michael Swearingen	Webex
Michael Watt - OMPA	Webex
Mike Knapp (OCC)	Webex
Nathan McNeil	Webex
Pat McCool	Webex
Rachel Hulett	Webex
Randy Collier (CUS)	Webex
Ronda Redden	Webex
Roy Boyer	Webex
Sandeep Baidwan	Webex
Steve Gaw	Webex
Tim Owens (NPPD)	Webex
Tim Soles	Webex
Wayman Smith (AEP)	Webex

Kip Fox (AEP) proxy to Wayman Smith (AEP)





ECONOMIC STUDIES WORKING GROUP

October 2nd, 2013

Net Conference

• A G E N D A •

9:00 am – 12:00 pm

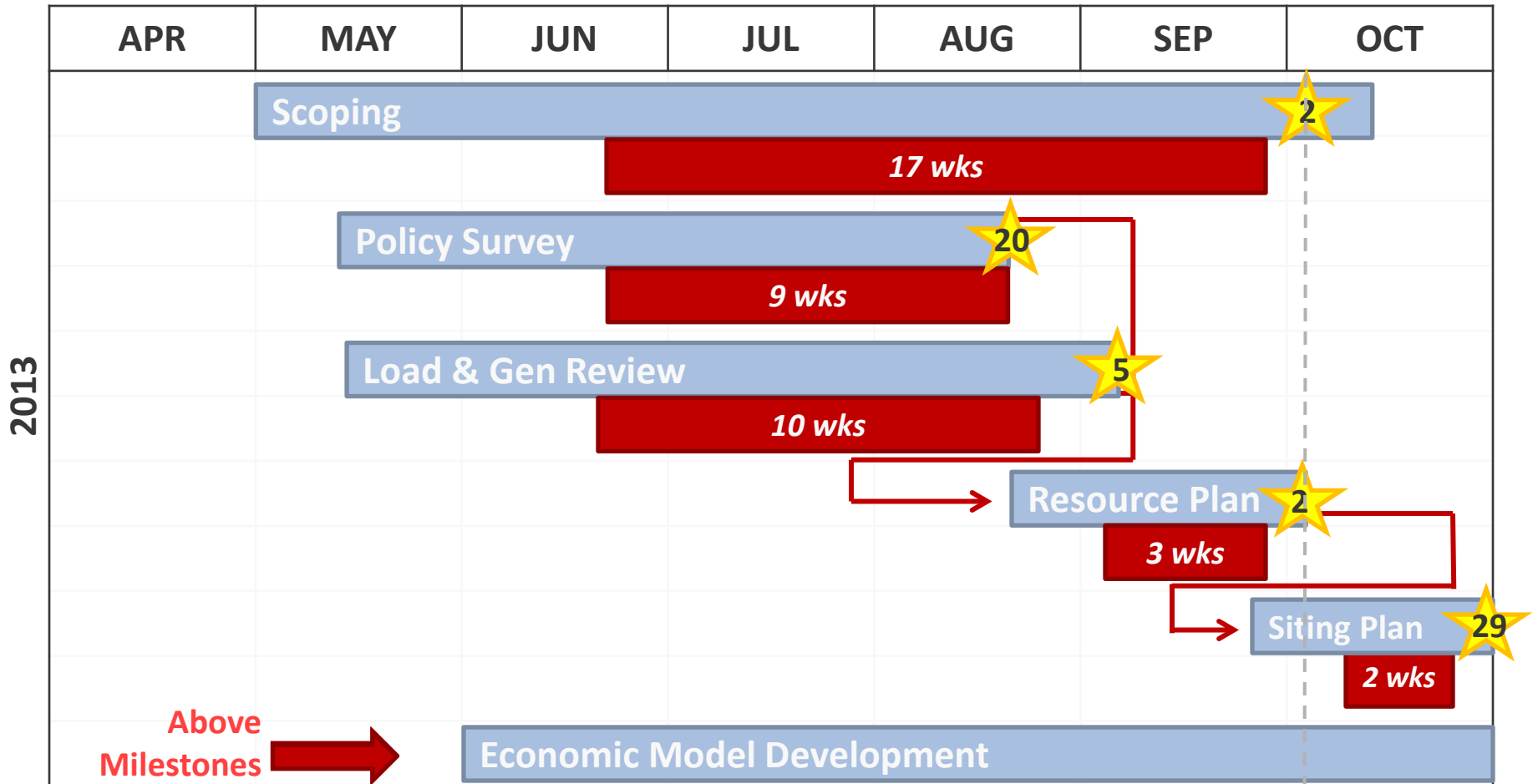
1. Administrative items
 - a. Call to Order, Introductions..... Alan Myers (5 minutes)
 - b. Receipt of Proxies Juliano Freitas (1 minute)
 - c. Review of Agenda Alan Myers (1 minute)
2. 2015 ITP10 Schedule Antoine Lucas (15 minutes)
3. 2015 ITP10 Final Scope (Approval Item) SPP Staff (30 minutes)
4. 2015 ITP10 Resource Plan (Approval Item)..... SPP Staff (2 hours)
 - a. Renewable Resource Plan
 - b. Conventional Resource Plan
5. HPILS Economic Load Assumptions..... SPP Staff (30 minutes)
6. Closing Items All

2015 ITP10 Schedule

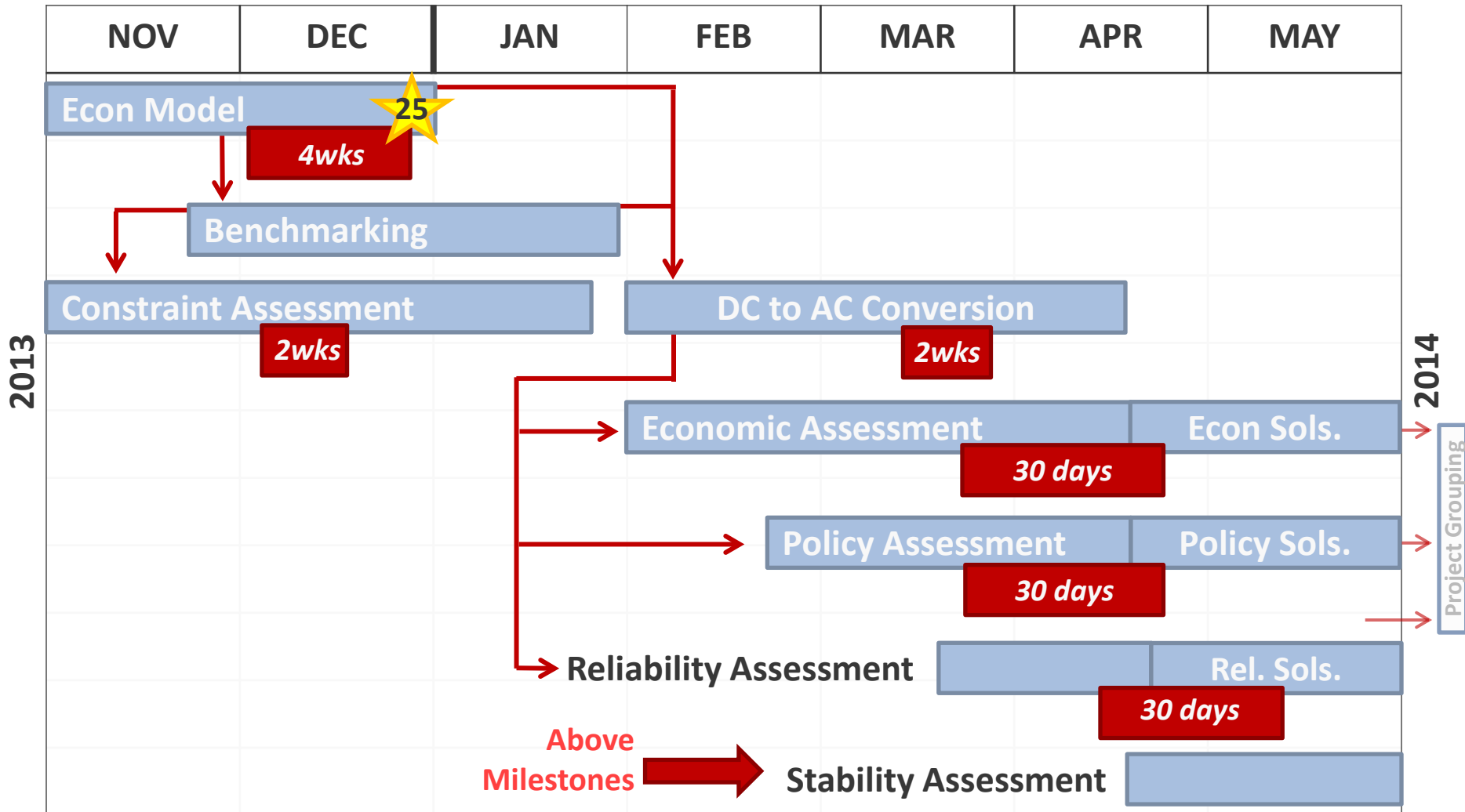
October 2nd, 2013



ITP10 Milestone Schedule (Apr-Oct 2013)



ITP10 Milestone Schedule (Nov 2013-May 2014)



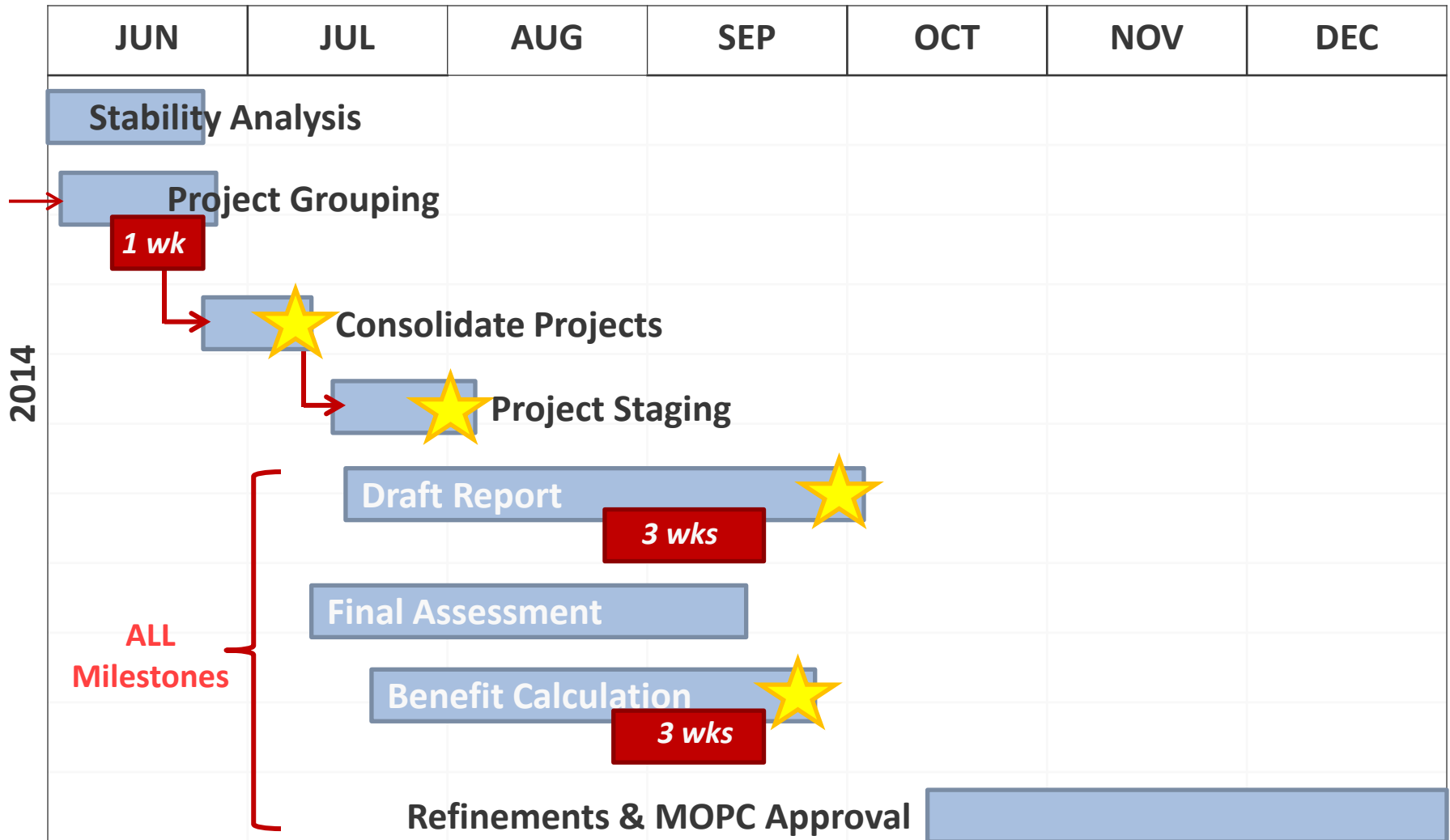
ESGW Approval

Member Review/Feedback Period

Milestone Period



ITP10 Milestone Schedule (Jun-Dec 2014)



ITP10 Milestone Schedule - Summary

Task Name	Start	Finish	Member Feedback	ESWG Approval
Scoping	April	October	17 weeks	10/2
Policy Survey	May	August	9 weeks	8/20
Load and Generation Review	May	September	10 weeks	9/5
Resource Plan	August	October	3 weeks	10/2
Siting Plan	September	October	2 weeks	10/24
Economic Model development	June	December	4 weeks	12/25 ☺
Benchmarking	November	January '14		
Constraint assessment - TWG Approval	November	January '14	2 weeks	
DC to AC Conversion of Peak Hours	January	April	2 weeks	
Reliability Assessment	March	April		
Reliability Solutions	April	May	30 days	
Economic assessment	February	April		
Economic Solutions	April	May	30 days	
Policy Assessment	February	April		
Policy Solutions	April	May	30 days	
Stability Assessment	April	June		
Project Grouping	June	June	1 week	
Consolidate Projects	June	July		TBD
Project Staging	July	August		TBD
Draft Report	July	October	3 weeks	TBD
Final Assessment	July	September		
Benefit Calculation	July	September	3 weeks	TBD
Refinements and MOPC Presentation	October	January '15		

2013

2014

2015 ITP10 Resource Plan

Juliano Freitas
10/02/2013



2015 ITP10 Resource Plan

- Developed to identify additional resources needed to meet renewable policy survey requirements and serve future load
- Serves as input to the economic model used for transmission analysis
- Seeking approval today of resource plans for all 3 futures
 - 2019 and 2024
 - These additional resources have not yet been sited
 - Will present at MOPC in October

2015 ITP10 Futures

- **Future 1: Business as Usual**
- **Future 2: Decreased Base Load Capacity**
 - Up to 20% capacity reduction of conventional generation and hydro
 - Most coal units under 200 MW retired
- **Future 3: Increased Input Prices**
 - Natural gas prices tripled
 - Carbon tax
 - Demand Response/Energy Efficiency

RENEWABLE RESOURCE PLAN

Renewable Resource Plan

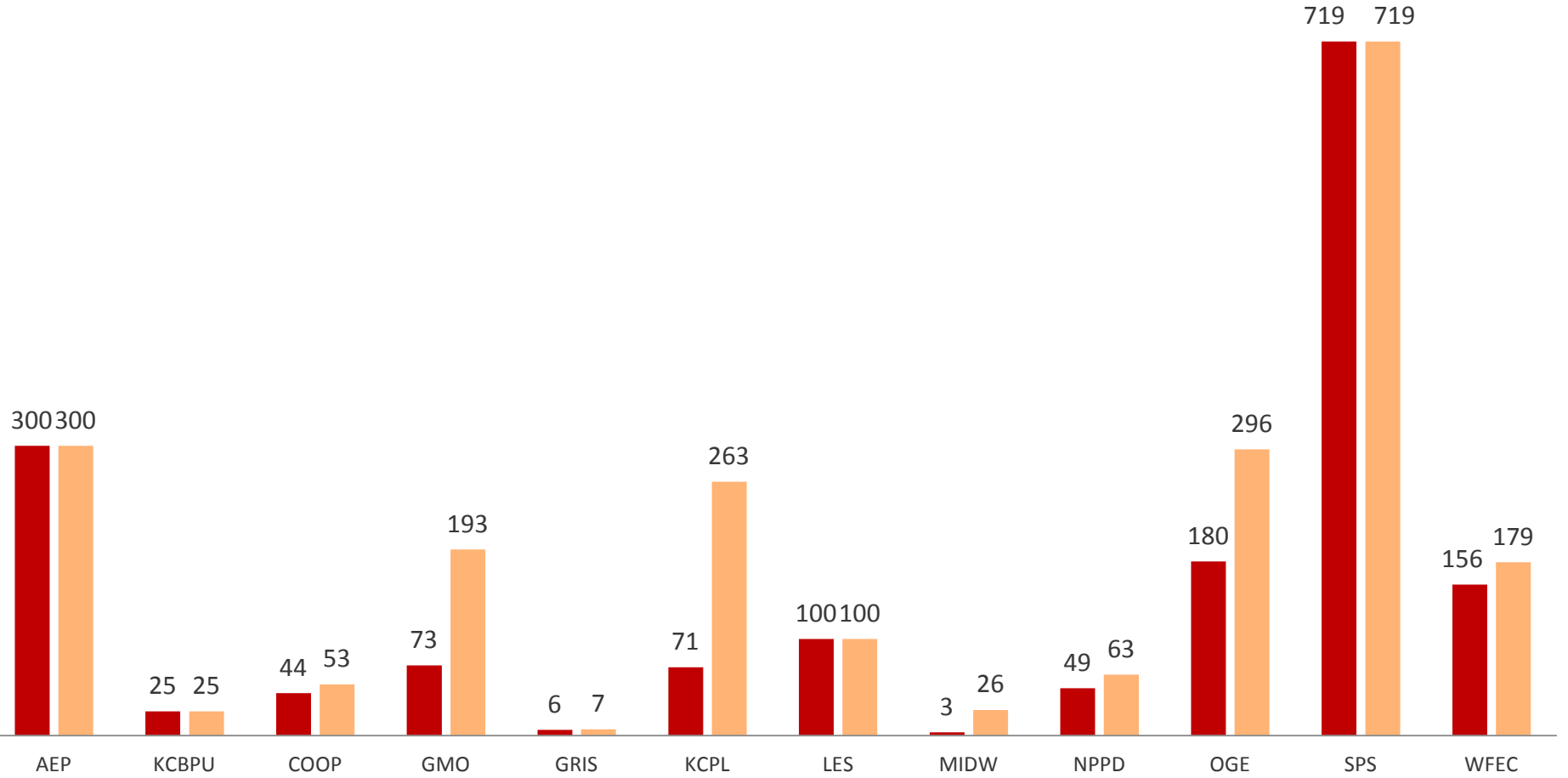
- **Policy Survey approved 8/20**
 - Changes identified during the resource planning effort
- **Renewable resource plan developed to address unmet renewable policy survey requirements**
 - **2.2 GW of renewables added**
 - Almost all additions are wind
 - 20.5MW solar
 - Serves as input to conventional resource plan

Renewable Resource Plan

- The following utilities listed in the renewable policy survey had no requirements or did not need additional renewables to meet survey requirements:
 - AECC
 - ETEC
 - SWEPCO
 - EMDE
 - KPP
 - MKEC
 - SUNC
 - MEAN
 - OMPA
 - OPPD
 - SPRM
 - GSEC
 - Lubbock
 - WERE

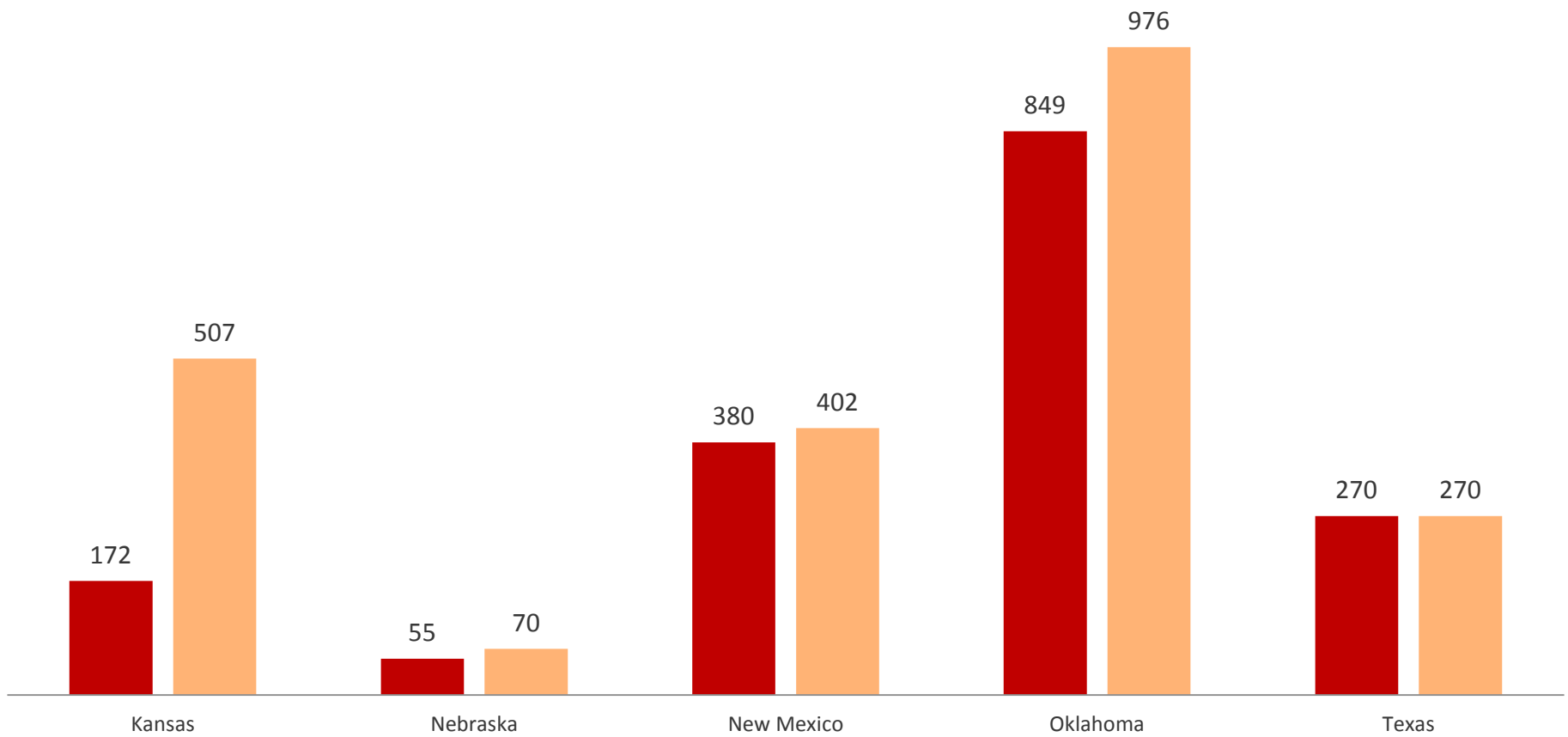
Capacity Additions (MW) By Utility

■ 2019 Capacity ■ 2024 Capacity



Tentative Capacity Additions (MW) By State

■ 2019 Capacity ■ 2024 Capacity



CONVENTIONAL RESOURCE PLAN

Inputs & Assumptions

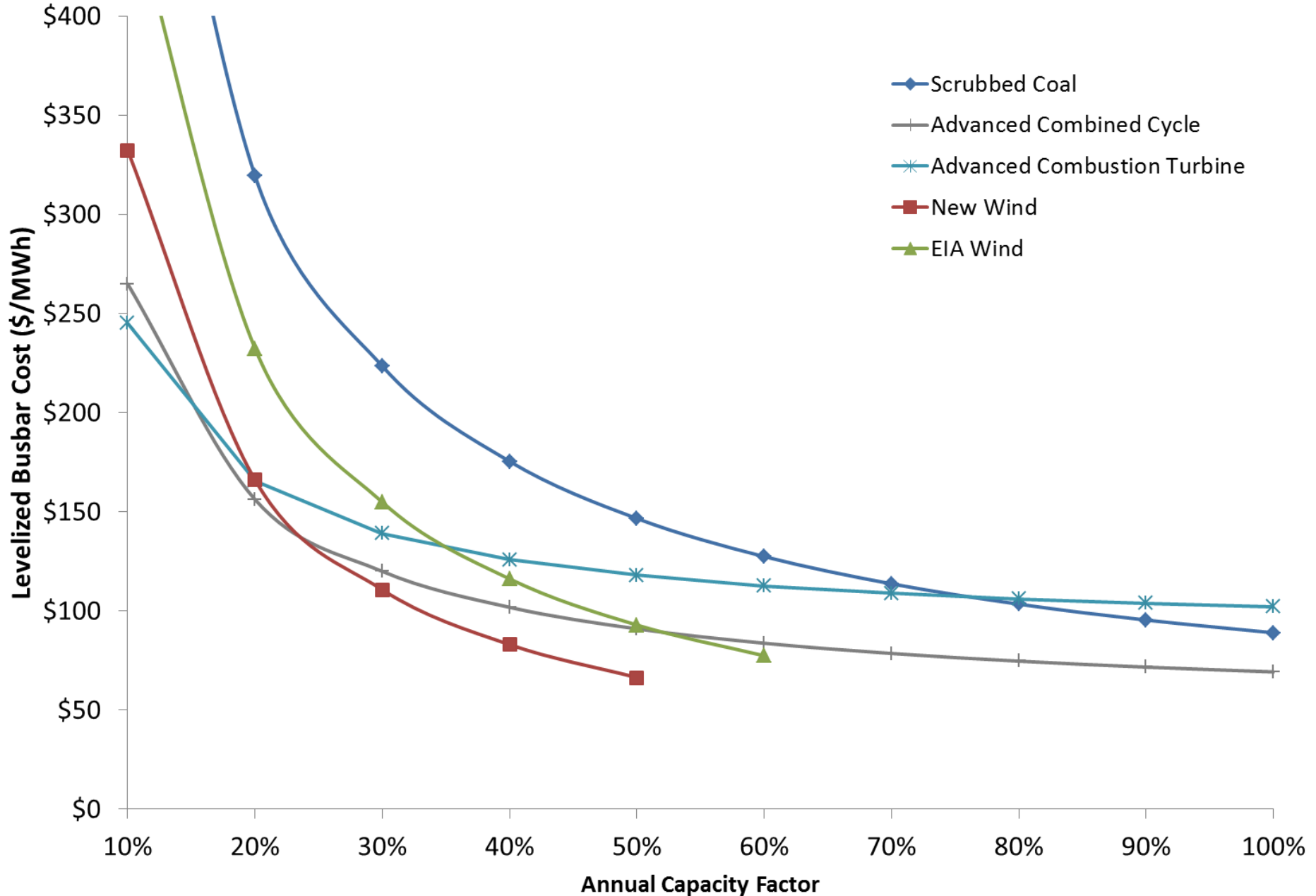
- **Drivers**
 - **Load and Generation Review**
 - **Renewable Resource Plan**
- **Zonal capacity margin requirement of 12% based on:**
 - **Peak load**
 - **Conventional generation**
 - **Renewable generation**
 - **PPA and DC Tie transactions**

Inputs & Assumptions

- **EIA Prototypes**
 - **Scrubbed Coal, Coal IGCC, Combined Cycle, Combustion Turbine, Nuclear, Landfill Gas, Biomass, Solar**
- **Wind prototype cost assumptions from 9/17 ESWG meeting were utilized**

Levelized Busbar Costs for Dispatchable Resource Options - EIA Select

20 Years, 8.0% Discount Rate, 2013\$, 100% Capacity Accreditation



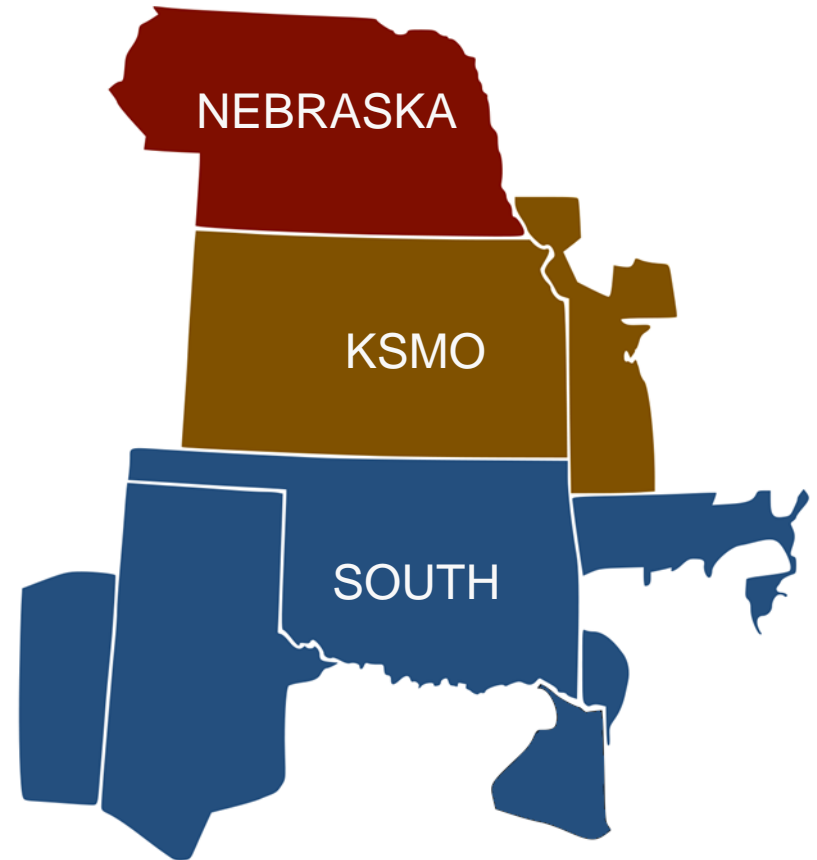
SPP in 2024, prior to additions

	F1 (GW)	F2 (GW)	F3 (GW)
Peak Load	58.8	58.8	56.0
Conventional Generation	58.5	51.7	58.5
Wind*	6.9	6.9	6.9
Other Renewable Generation	2.9	2.4	2.9

*Includes SPP-designated wind only

Sub-regions in Strategist simulations

- Three sub-regions used to represent the SPP region
 - Detailed granularity
 - Faster run time

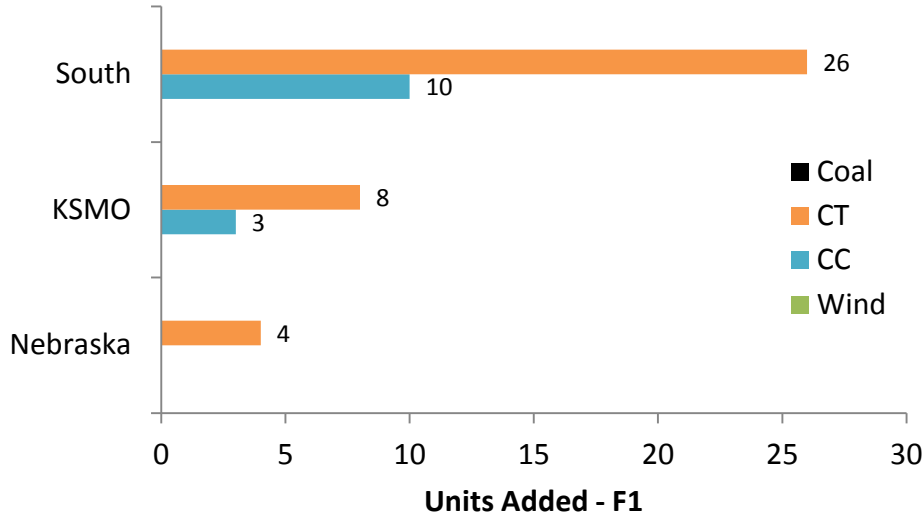


Strategist simulations

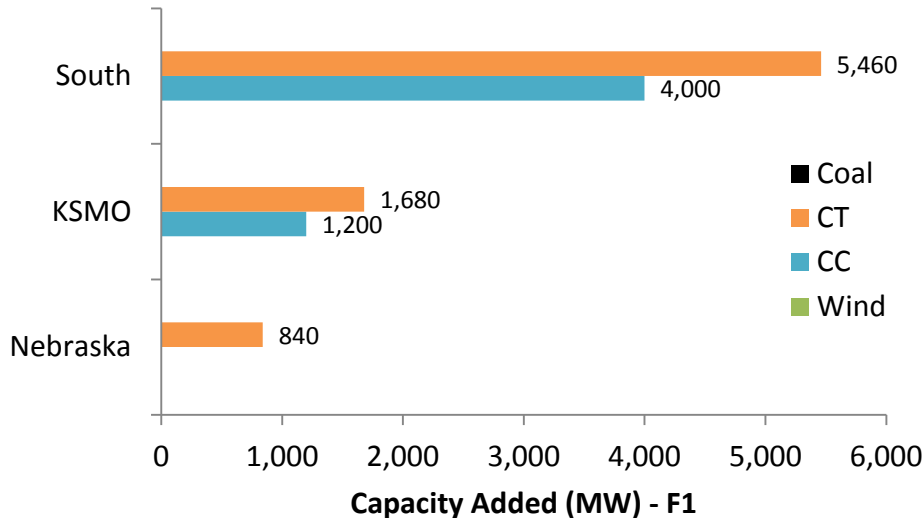
- **Generation expansion plan developed for each of 3 sub-regions**
- **Constraints**
 - Zonal load requirements
 - Zonal generation capacity
 - Zonal capacity margin requirement
- **Units allocated to zones within the sub-region based on zonal capacity needs**

CONVENTIONAL RESOURCE PLAN RESULTS

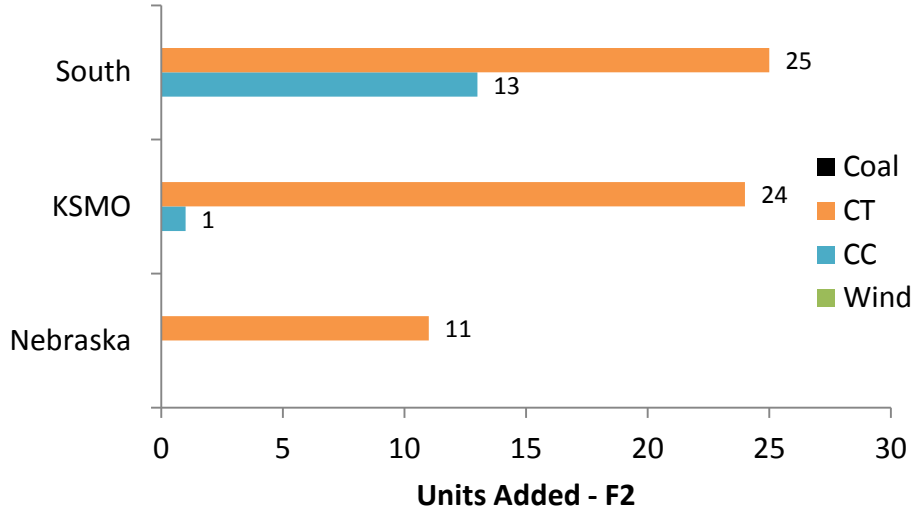
Future 1 Resource Additions through 2024



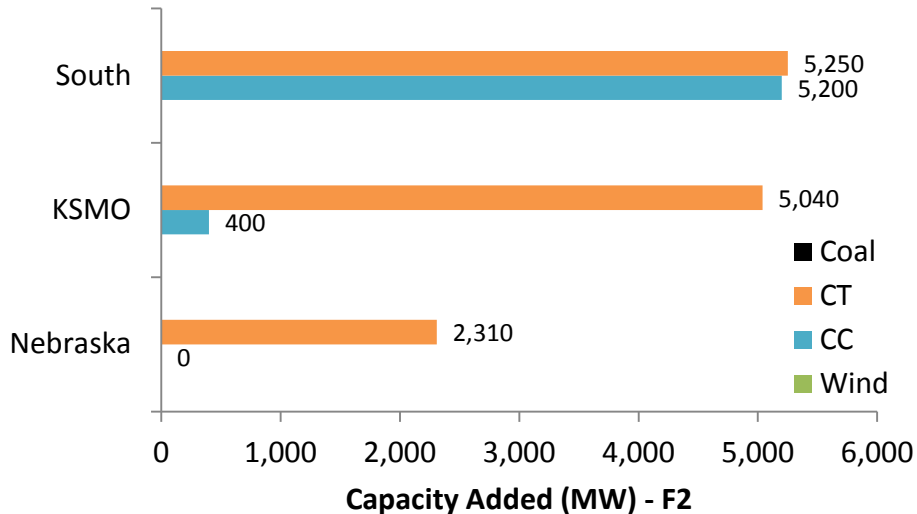
Total F1 Capacity Additions:
13.2 GW



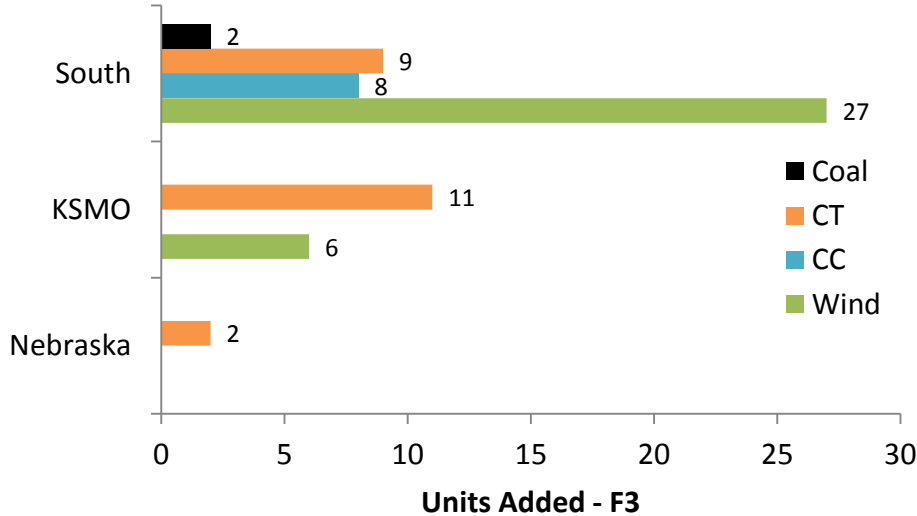
Future 2 Resource Additions through 2024



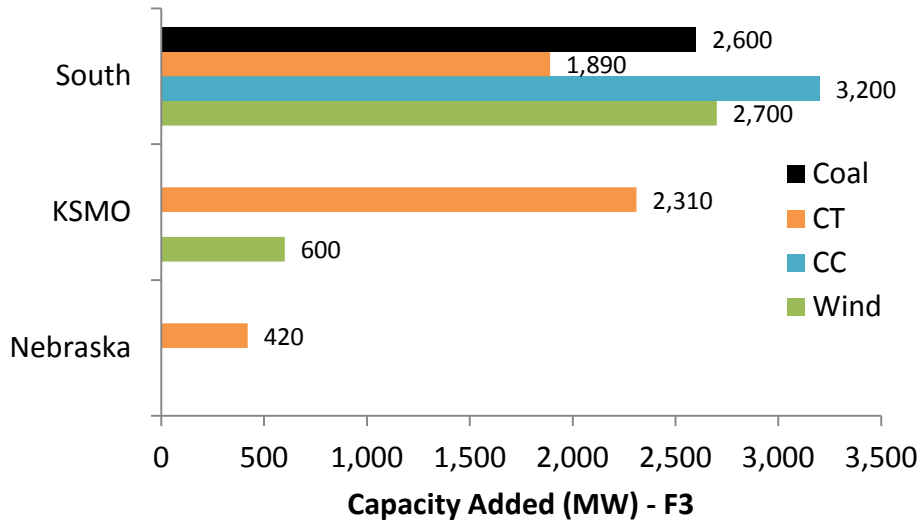
Total F2 Capacity Additions:
18.2 GW



Future 3 Resource Additions through 2024



Total F3 Capacity Additions:
13.7 GW



Observations from Future 1 Results

Study	2015 ITP10	2013 ITP20
Year	2024	2023
Capacity Additions (GW)	13.2	7.3

- **Increase in capacity need for ITP10**
 - Increase in load projections
 - Retirements
- **CC and CT additions**
 - Low gas prices
 - Low capital costs

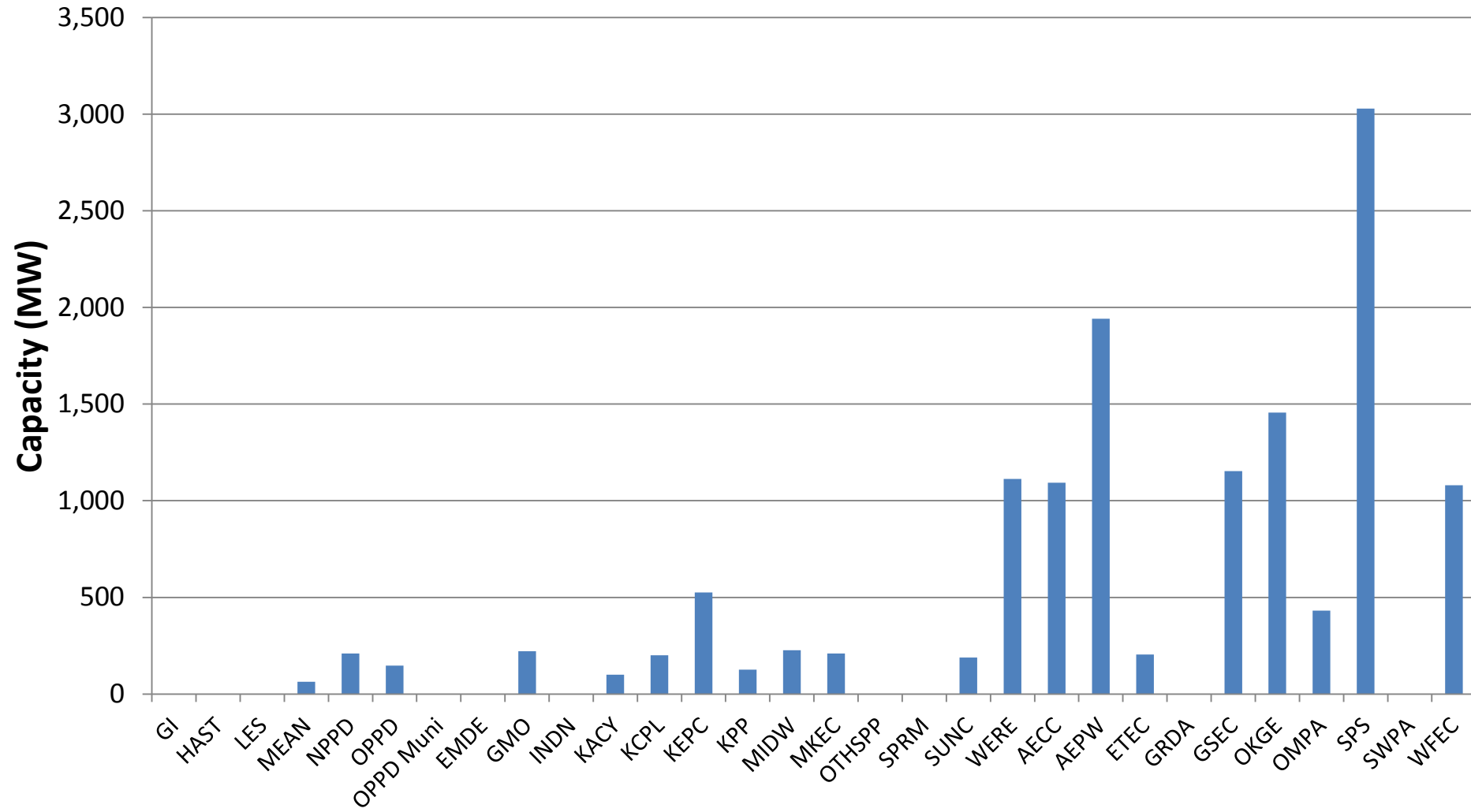
Observations from Future 2 Results

- **18.2 GW of capacity additions due to decrease in base load capacity**
- **CC and CT additions**
 - **Low gas prices**
 - **Low capital costs**

Observations from Future 3 Results

- **Assumptions adversely impact gas more than coal**
 - Carbon tax makes coal less economic for supplying energy
 - Tripling of natural gas prices makes gas less economic for supplying energy
- **Gas units selected to meet capacity requirements**
- **Wind selected to meet energy requirements**

Future 3 Capacity Additions by Zone



Approval

- **SPP Staff recommends the ESWG approve the 2015 ITP10 generation resource plans for Futures 1-3**

- Policy Survey
- Load and Gen Review
- Futures Development



Scope
Conventional Resource Plan
Renewable Resource Plan



Oct 15 2013
MOPC Approval



Oct 24 2013
Siting Plan
ESWG Approval



Economic
Model Build