Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

February 9, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• SUMMARY OF ACTIONS TAKEN •

1. Initiated the formation of a task force to address the monetization of benefit metrics for the Regional Cost Allocation Review.
2. Approved high level variables for use in the joint "business as usual" future that is being coordinated with the Midwest ISO.
3. Provided direction and comments for the continued development of the 2013 ITP20 draft scope.

Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

February 9, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• 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 9:32 a.m., welcomed those in attendance, and asked for introductions (Attachment – Attendance List).

There were 28 in person participants and 19 web conference participants representing 11 of 11 members.

Agenda Item 1b – Receipt of Proxies

Tim Miller (SPP staff) received proxy statements (Attachment – Proxy Statements).

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 (Attachment – Agenda).

Agenda Item 2 – Review of Past Action Items

Tim Miller (SPP staff) called the group's attention the newly created action item list. (Attachment – Action Items).

Agenda Item 3 – Consent Agenda

The Consent Agenda included the following requested Actions (Attachment – Consent Agenda):

Approval of Meeting Minutes – January 12, 2012

Chair Alan Myers (ITC Great Plains, LLC) asked for changes to the minutes. Kip Fox (AEP) asked for a modification to the Probabilistic Assessment related motion. The modification altered the statement to state the future Probablistic Assessment reports "be reviewed by the ESWG". This modification was presented to the group and the following motion was made:

A motion to approve the minutes was made by David Ried (OPPD) and seconded by Kip Fox (AEP). The motion was approved unanimously.

Agenda Item 4 – EIPC Update

Doug Bowman (SPP staff) updated the group regarding the powerflow model development currently underway for the three Eastern Interconnect Planning Cooperative (EIPC) scenarios. In response to a question from Blake Elliott (BPU), it was explained that high wind, low load case was selected based upon the ratio of wind generation to load and does not necessarily reflect one particular hour of the day. The models will be provided to the ESWG for review. The ESWG will be given the opportunity to review the models in the next weeks.

ACTION ITEM: Staff will make the solved powerflow models for the EIPC scenarios available to the ESWG as soon as possible.

Agenda Item 5 – SPC update discussion (EPA study related)

Alan Myers (ITC Great Plains, LLC) provided a short update of the Strategic Planning Committee's acceptance of the EPA study recommendation made by the ESWG. The study was approved by the SPC and it was noted that no objections were raised at the Board of Directors meeting. The SPC specifically recommended that the study be delayed until April of this year and be completed by April 2013. Roy Boyer (Xcel Energy) recommended that the study should not be pursued if the results of the survey indicate little change from the 2013 ITP10 assumptions. It was noted that this study is different from the EPA Impact Assessment that addresses near-term concerns via confidential stakeholder surveys.

ACTION ITEM: Staff will provide a straw-man scope for the study at the March ESWG meeting and have staff on hand to discuss the EPA Impact Assessment currently underway.

Paul Dietz (Westar) noted that the studies utilizing resource plans and retirements should be disclaim that the changes are for the purposes of the transmission planning and do not reflect commitments on behalf of the utilities to retire or change generation resource schemes.

It was generally noted that the study should coordinate as far as it is possible (given the confidentiality of survey submittals) with the EPA Impact Assessment currently underway. Charles Cates (SPP staff) anticipated that the study would involve the Transmission Working Group (TWG) as well.

ACTION ITEM: Alan Myers (ITC Great Plains, LLC) and Tim Miller (SPP staff) will coordinate with Noman Williams (TWG Chair) and Rachel Hulett (SPP staff) and provide the ESWG with the EPA Impact Assessment scope if applicable.

Agenda Item 6 – 2013 ITP20 Scope

Josh Ross (SPP staff) presented the 2013 ITP20 draft scope. Changes were suggested by the group, and incorporated into the draft manual. The changes are summarized below:

- Change Board of Directors/RSC to Board of Directors only.
- Include that Entergy is assumed to be part of MISO in each of the five futures.
- Change cost estimate language from early February 2012 to early 2012 or just 2012.
- Correct Table 2 to show $/kW, not $/kWh.
- Include comment that futures 1 and 5 have different assumptions.
- Clarify meaning of "growth of load", clean up DSM language, possibly add more specifics.
- Update language regarding fuel prices, emission allowances, and escalation/growth rates
- Updated capital cost language
- Add the treatment of transportation costs
- Add language specifying the method in which robust projects will be selected in light of the projects' behavior in each individual future.
- Update treatment of existing DC tie modeling (schedule discussion with AEP)
- Include specific fuel prices, transportation costs, emission prices, escalation/growth rates once the information is released.

ACTION ITEM: Staff will provide a version of the 2013 ITP20 scope that addresses the changes suggested and discussed during the meeting.

The group discussed the staff recommendation regarding the joint future (Future 5) at length. This "business as usual" type future is being jointly developed by the SPP ESWG and the Midwest ISO Planning Advisory Committee (PAC). The values were accepted and updated in the variables spreadsheet (Attachment – Joint Future Variables):

The group recognized the capital costs as outdated (from Department of Energy in 2010) and discussed alternative values and if none where available, the impact of using the outdated capital costs. Steve Gaw (Wind Coalition) cited examples from more recent studies (Attachment – Wind Capital Cost Estimates). In addition, the group recommended that the emission costs follow the PowerBase defaults to be made available with the simulation ready data in February 2012.

ACTION ITEM: Staff should coordinate with MISO staff regarding the details of the modeling not reflected in the joint futures variable spreadsheet and report back to the group. The reported data should include things such as forced outage rate of potential new capacity additions, treatment of mercury in the assessment, hurdle rates, etc. In addition, provide information regarding the drop dead date with MISO on these items.

ACTION ITEM: Staff should provide examples of the usage of the 2.5% interest rate in relation to real and nominal values and show correspondence or inclusion of growth rates.

Paul Dietz (Westar) recommended that the models reflect the reductions in emissions (NO_X particularly) that utilities are adopting in the face of upcoming changes to the regulation landscape. In particular, the usage of emission curves is important.

Following discussion this motion was made:

> **A motion to utilize the capital costs listed in the joint futures variables workbook and to make efforts to change the values if better values are obtained for the SPP future's resource plans was made by Greg Sweet (EDE) and seconded by David Ried. The motion was approved and four members abstained with these comments:**
>
> > **Paul Dietz (Westar) – does not think this hurried approach is doing a good job of truly coordinating with MISO on this future. Rather than just taking what was proposed for the sake of time, better values need to be pursued. MISO needs to provide representation during these discussions.**
> >
> > **Kip Fox (AEP) – the unit capital costs should be higher (except for the wind values) and would prefer updated values, perhaps from the EIA in April in order to use publically available data. Need more than a week to review values internally.**
> >
> > **Tom Hestermann (Sunflower) and Bennie Weeks (Xcel Energy/SPS) also abstained.**

Further discussion of the draft scope yielded these discussions action items:

Roy Boyer (Xcel Energy) requested the schedule show a minimum of 30 days for stakeholder review activities, and longer if the review period included holidays.

Regarding Future 4, Roy Boyer (Xcel Energy) mentioned that 1% annual load reduction was not appropriate for SPS, and perhaps other areas. He also suggested the more important effect in this future might be load shifting. He also noted technologies such as plug-in hybrid cars are a viable technology today, and will actually increase load, but likely not at peak.

Roy Boyer (Xcel Energy) discouraged including the 2013 ITPNT results in the ITP20 topology. These projects will not have NTC when added to the topology per the schedule, and most of these projects will be at less than 345 kV. There would be little gained by delaying the final topology to include these projects.

Roy Boyer (Xcel Energy) requested Tres Amigas and Clean Line's Plains and Eastern projects be included in the study. He noted connection studies are currently underway for both these projects; both can have significant impact on the SPP system; both have projected in-service dates well within the 20 year time frame of this study; and even if these specific projects are not built, there are several similar project proposals today so something similar will likely be built in the next 20 years.

Bennie Weeks (Xcel Energy) requested a distinction be made between mandated wind and targets, and this difference be evaluated as a sensitivity.

Roy Boyer (Xcel Energy) noted that each future should have a portfolio to resolve all reliability, economic, and policy needs. The reliability, economic, and policy need satisfied by a portfolio project should be identified.

ACTION ITEM: Staff request assumptions for energy conservation within the MDWG models for consistency with the policy survey (particularly for Future 4).

ACTION ITEM: Staff to follow up with AEP regarding DC tie modeling options and suggest changes to the scope.

Agenda Item 7 – Regional Cost Allocation Review

Tim Miller (SPP staff) provided the group with staff recommendations for addressing the benefit metric calculations. The group decided to form a task force and schedule meetings in order to report back to the ESWG in roughly fifty days. Greg Sweet (Empire) recommended that the Metrics Manual created by CRA for the last ITP20 be used as a springboard.

ACTION ITEM: Alan Myers (ITC Great Plains, LLC) and Tim Miller (SPP staff) will draft a scope for the working group and provide it to the group in order to solicit involvement within the next ten days.

Agenda Item 8 – Organizational Effectiveness Survey

Tim Miller (SPP staff) summarized the results of the 2011 ESWG effectiveness survey. David Ried (OPPD) expressed difficulty in printing the fonts contained in the PowerPoint presentations and asked that a newer font set be utilized. Also asked that print ranges be set on the excel spreadsheets to avoid printing unnecessary pages.

Agenda Item 9 – FERC Order 1000 Interregional Compliance

David Kelley (SPP staff) laid out staff's plans for addressing FERC Order 1000 compliance and how it may affect the ESWG. The members of the group were invited to a meeting of a task force and the Seams Steering Committee to address these issues on February 16.

Adjournment

Alan Myers (ITC Great Plains, LLC) asked if any other items needed discussion at the meeting.

A recap was provided about some of the discussion at the previous day's Cost Allocation Working Group (CAWG) meeting. Specifically, this discussion regarded thoughts about the definition of policy projects for transmission planning and the use of state renewable mandates, goals, and/or targets.

The meeting was adjourned at 3:47 p.m. on Thursday, February 9, 2012.

Respectfully Submitted,

Tim Miller,

Secretary

Southwest Power Pool, Inc.

ECONOMIC STUDIES WORKING GROUP

February 9, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• ATTENDANCE LIST •

Southwest Power Pool, Inc.

ESWG MEETING

February 9, 2012

AEP Offices/Dallas, TX

• ATTENDANCE LIST •

Name	Company
Alan Myers	ITC Great Plains
Wayne Galli	Clean Line Energy
Barry Huddleston	Clean Line Energy
Michael Watt	OMPA
Dennis Reed	Westar
Paul Dietz	Westar
Bennie Weeks	Xcel Energy / SPS
Roy Boyer	Xcel Energy
Bill Reid	Climate Energy Project
Bruce Walkup	AECC
Leon Howell	OG&E
Mike Collins	OGE

1/3

Southwest Power Pool, Inc.

ESWG MEETING

February 9, 2012

AEP Offices/Dallas, TX

• ATTENDANCE LIST •

Name	Company
Josh Ross	SPP
Tom Hestermann	Sunflower
Kip Fox	AEP
Paul Hassink	✓
Kurt Stradley	LES
Mike Proctor	PSC Consultant
Walt Cecil	MoPSC Staff
Tempstin Roach	PUC Texas
Mitchell L Williams	WFEC
Charles Cates	SPP
Pat Mosier	ARK. PSC
Michael C. Moffet	Sunflower Elec.
Steve Gaw	Wind Coalition
Lloyd Kolb	GSEC
Bruce Cude	Xcel Energy/SPS
Tim Miller	SPP staff

2/3

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ESWG MEETING

February 9, 2012

AEP Offices/Dallas, TX

• ATTENDANCE LIST •

WEB CONFERENCE

Name	Company
GREG SWEET	EMPIRE
BLAKE ELLIOTT	BPU
DAVID RIED	OPPD
JIM SANDERSON	KCC
CRAIG BERG	Xcel ENERGY
HARSHI PANCHAL	CONSTELLATION ENERGY
DAN LENIHAN	OPPD
TOM DEBAUN	KCC
TIM OWENS	NPPD
DAN JONES	SPP staff
MICHAEL RAY	SPP staff
JOHN KRAJEWSKI	CONSULTANT
BRETT HOOTON	SPP staff
DAVID KELLEY	SPP staff
BRITTNEY MILLER	AR PSC
DAVID VAN BEEK	MISO

3/3

Southwest Power Pool, Inc.

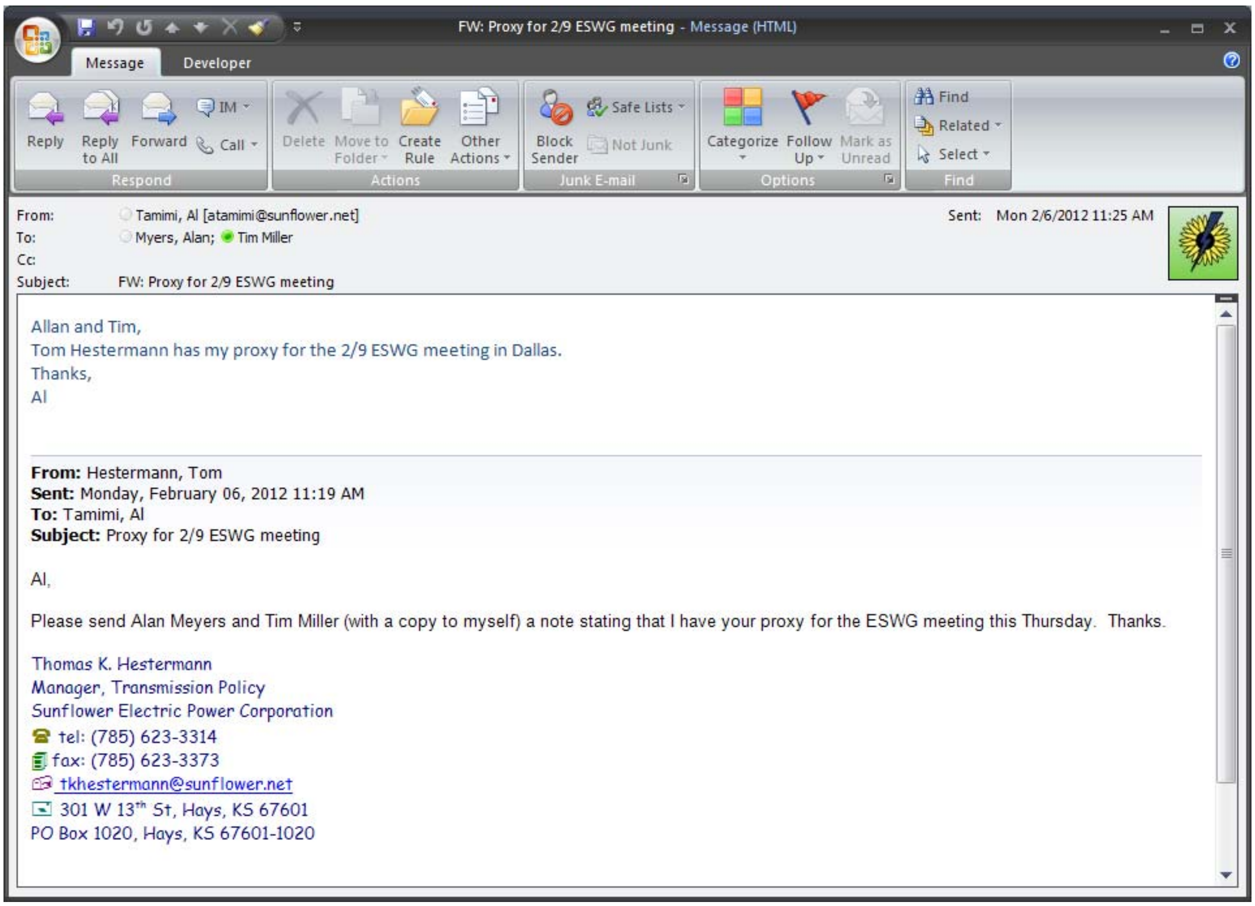
ECONOMIC STUDIES WORKING GROUP

February 9, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• PROXY STATEMENTS •



FW: Proxy for 2/9 ESWG meeting - Message (HTML)

From: Tamimi, Al [atamimi@sunflower.net]

To: Myers, Alan; Tim Miller

Cc:

Subject: FW: Proxy for 2/9 ESWG meeting

Sent: Mon 2/6/2012 11:25 AM

Allan and Tim,

Tom Hestermann has my proxy for the 2/9 ESWG meeting in Dallas.

Thanks,

Al

From: Hestermann, Tom

Sent: Monday, February 06, 2012 11:19 AM

To: Tamimi, Al

Subject: Proxy for 2/9 ESWG meeting

Al,

Please send Alan Meyers and Tim Miller (with a copy to myself) a note stating that I have your proxy for the ESWG meeting this Thursday. Thanks.

Thomas K. Hestermann

Manager, Transmission Policy

Sunflower Electric Power Corporation

tel: (785) 623-3314

fax: (785) 623-3373

tkhestermann@sunflower.net

301 W 13th St, Hays, KS 67601

PO Box 1020, Hays, KS 67601-1020

SPP Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

February 9, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• A G E N D A •

9:30 am – 3:30 pm

1. Administrative items
    a. Call to Order, Introductions....................Alan Myers (5 minutes)
    b. Receipt of Proxies .... Tim Miller(1 minute)
    c. Review of Agenda ....Alan Myers (1 minute)
2. Review of Past Action Items .... Tim Miller (5 minutes)
3. Consent Agenda (Approval Item)[1]
    a. Approval of Meeting Minutes – January 12, 2012 ....Alan Myers (1 minute)
4. EIPC Update.................... Doug Bowman (5 minutes)
5. SPC update discussion (EPA study related) ....All (10 minutes)
6. 2013 ITP20 Scope....................Josh Ross (2 hours)
    a. SPP specific futures
    b. Joint future with MISO (Approval Item)[i]
    c. Resource Plan & Policy Survey
7. Regional Cost Allocation Review (MOPC/RARTF action item)....................Tim Miller (2 hours)
    a. Prioritize metrics
    b. Plan for addressing the challenge
8. Organizational Effectiveness Survey.................... Tim Miller (15 minutes)
9. FERC Order 1000 Interregional Compliance ....David Kelley (10 minutes)
10. Closing Items .... All

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[1] Background Materials Included

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MISO / SPP Joint Future				
		MISO Proposed Values	SPP Proposed Values	
Alternative Unit Capital Costs[1]				
Coal	($/KW)	2,893	2,893	
CC	($/KW)	1,020	1,020	
CT	($/KW)	677	677	
Nuclear	($/KW)	5,428	5,428	
Wind-Onshore	($/KW)	2,232	2,232	
IGCC	($/KW)	3,277	3,277	
Pumped Storage Hydro	($/KW)	5,692	5,692	
Compressed Air Energy Storage	($/KW)	1,272	1,272	
Photovoltaic	($/KW)	5,497	5,497	
Biomass	($/KW)	3,927	3,927	
Conventional Hydro	($/KW)	3,130	3,130	
Wind-Offshore	($/KW)	6,079	6,079	
Distributive Generation-Peak	($/KW)	1,784	1,784	
Demand and Energy				
Demand Growth Rate	%	0.91%[2]	MDWG based	
Energy Growth Rate	%	1.17%[3]	MDWG based	
Fuel Prices (Starting Values)				Notes
Gas	($/MMBtu)	Futures Market Forecast[4]	Futures Market Forecast[4]	Utilize NYMEX futures, for years past the latest future, utilize the growth rates from the DOE Annual Energy Outlook. Set a lock date, preferably just before starting the studies.
Oil	($/MMBtu)	PowerBase Default	PowerBase Default	
Coal	($/MMBtu)	PowerBase Default	PowerBase Default	This will correspond to the Ventyx simulation ready data (published the week of Feb 15th). Utilize transportation costs from this same dataset.

Uranium	($/MMBtu)	PowerBase Default	PowerBase Default	
Fuel Prices (Escalation Rates)				
Gas	%	2.5	PowerBase Default	Utilize PowerBase forecasts for all available years
Oil	%	2.5	PowerBase Default	
Coal	%	2.5	PowerBase Default	
Uranium	%	2.5	PowerBase Default	
Emission Costs & Retirement Level				
SO_2	($/ton)	500 [5]	PowerBase Default	Currently available simulation ready data indicates the value will go from 537 in the near term to 39 in 2033
NOx	($/ton)	3,000 [5]	PowerBase Default	Currently available simulation ready data indicates the value will go from 1190 in the near term to 213 in 2033
CO_2	($/ton)		PowerBase Default ($0)	
Forced Coal Retirements	MW	12,600 [6]	Results of Policy Survey	
Economic Variables				
Inflation Rate	%	2.5	2.50	
Renewable Penetration as a Percentage of Total Energy Delivered				
State Mandates	%	Existing State Mandates & Goals	Results of Policy Survey	

[1] All costs are in 2012 dollars

[2] Demand growth rate is the Module-E 50/50 load forecast growth rate (as of 3/31/11)
[3] Energy growth rate is the Module-E energy forecast growth rate (as of 3/31/11)

[4] Henry Hub gas price

[5] Emission costs for SOx and NOx will be modeled to comply with CSAPR regulations

[6] As identified in the MISO EPA Regulation Impact Analysis Study

Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

Pending Action Items Status Report

February 9, 2012

ID	Action Item	Date Originated	Status	Comments
002	For discussion at the next meeting Alan Myers and staff will outline work items for the group and discuss ESWG responsibilities per the group's charter.	Aug 2, 2011 ESWG	In Progress ESWG & Staff	
013	SPP staff will recap the four options identified to address the concerns regarding the forthcoming EPA regulations	Nov, 10, 2011	Complete	Provided at Dec 12, 2011 meeting
015	SPP staff will coordinate meetings between the ESWG and CAWG and present a list of proposed locations at the April 5, 2012 ESWG teleconference.	Jan 12, 2012	In Progress Staff	
016	Doug Bowman (SPP staff) will provide an update to the ESWG regarding the EIPC at the February 9, 2012 meeting.	Jan 12, 2012	In Progress Staff	

Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

January 12, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• SUMMARY OF ACTIONS TAKEN •

1. The ESWG reviewed the SPP 2011 Probabilistic Assessment Report.
2. The ESWG adopted five futures for endorsement to the Strategic Planning Committee (SPC):
    1. Business as Usual
    2. Additional Wind
    3. Additional Wind plus Exports
    4. Combined Policy
    5. Joint ESWG/MISO PAC Future
3. The ESWG gained consensus that a joint "business as usual" future be pursued following the discussions at the December 1, 2011 meeting with the Midwest ISO Planning Advisory Committee.

Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

January 12, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• MINUTES •

Agenda Item 1 – Administrative Items & agenda review

Chair Alan Myers (ITC Great Plains, LLC) called the meeting of the Economic Studies Working Group (ESWG) to order at 9:33 a.m., welcomed those in attendance, and asked for introductions (Attachment – Attendance List).

Agenda Item 1a – Attendance

There were 18 in person participants and 13 teleconference participants representing 8 of 11 members.

Agenda Item 1b – ESWG membership opportunities

Chair Alan Myers (ITC Great Plans, LLC) updated the group regarding two (2) open positions for voting members representing Transmission Users per the group charter and requested interested parties to apply for membership.

Agenda Item 1c – Minutes Approval

The group reviewed the minutes for past meetings.

> **A motion to approve the eight sets of minutes was made by Kip Fox (AEP) and seconded by Bruce Walkup (Arkansas Electric Cooperative Co.).**

Corrections to six of the sets of minutes were provided by David Ried (Omaha Public Power District) and a request was made that the minutes be made available in a timely manner. Adam McKinnie (Missouri Public Service Commission) asked for clarification regarding the motion passed at the January 5, 2012 meeting and the treatment of the 2012 ITP10 project list. Chair Alan Myers (ITC Great Plans, LLC) and the group affirmed that the project list was not specifically acted upon.

> **Following discussion, Kip Fox (AEP) amended his motion to include the changes provided by David Ried. The motion was approved unanimously.**

Agenda Item 1d – ESWG meeting schedule

The group reviewed the proposed calendar list for 2012 and agreed to utilize the dates listed. The following meetings were selected for face to face venues at the AEP offices in Dallas pending their availability: February 9, 2012 and March 8, 2012. The April 5, 2012 meeting was selected as a conference call. The schedule will be revisited at the April meeting with proposed locations for the rest of the meetings. Charles Cates (SPP staff) will coordinate with the Cost Allocation Working Group (CAWG) in order to select the same locations for those meetings.

ACTION ITEM: Staff coordinate meetings between the ESWG and CAWG and present a list of proposed locations at the April 5, 2012 ESWG teleconference.

Agenda Item 6 – RARTF recommendations related to the ESWG

Paul Suskie (SPP staff) provided an overview of the Regional Allocation Review Task Force report and highlighted the items in the report related to the economic studies and metrics within the ESWG's purview. Section 3.8 of the report specifically outlines the benefits to be calculated in the review. The report outlines the request from the RARTF that the ESWG develop methodologies for valuing reliability and public policy related projects, and suggest additional metrics that should be considered in the review.

Each of these benefits should be monetized for inclusion in the review. The group discussed the implications of the review and possible approaches. Items identified by the group that will warrant future attention included:

- Jim Sanderson (Kansas Corp. Commission) requested that attention be given to calculations in order to avoid double-counting of benefit.
- Paul Dietz (Westar) requested that any conservative bias to the calculation of the benefits be transparently identified as the ESWG moves forward ,
- The identification of zones within the review will be important regarding ancillary services.
- The group should consider the development of a task force to address the challenges of the review.

ACTION ITEM: The group will revisit the Regional Allocation Review (RAR) during the February 9, 2012 meeting and decided whether to identify a task force to address the development of the benefit metrics.

Paul Suskie (SPP staff) concluded the overview by drawing attention to the strong involvement of the states in the review process through the Regional State Committee (RSC) and thanked the group for their attention.

Agenda Item 2 – 2011 Probabilistic Assessment

Michael Odom (SPP staff) stepped through the 2011 Probabilistic Assessment assumptions, calculation methods, and conclusions. The group provided several comments for improvements to the study and requested involvement in the review of future studies.

The group discussed the decrease in Daily LOLE with the decrease of capacity margin reported in the study. It was noted that the hourly LOLE (LOLH) and unserved load increased with the capacity margin decrease.

> **A motion to that ESWG understands that this report will be submitted to NERC and also recommends that future reports be reviewed by the ESWG was made by Kip Fox (AEP) and seconded by Paul Dietz (Westar). The motion was approved with 6 in favor, 2 against. David Ried (OPPD) and Kurt Stradley (LES) registered their concerns that the report could not be acted upon because they were unable to view the final version presented at the meeting while on teleconference, the modeling used in the study incorporate 2008 weather patterns for load profile shapes and 2009 weather patterns for the wind shape, and the results were suspect since the LOLE was shown to decrease while the capacity margin decreased (as the capacity margin is reduced, the LOLE should increase).**

Deleted: made available for further review

Deleted: .

Following discussion, Chair Alan Myers (ITC Great Plans, LLC) requested staff provide a web conference option for all future face to face ESWG meetings.

Agenda Item 3 – 2013 ITP20 Scope development

Josh Ross (SPP staff) presented an overview of the 2013 ITP20 futures and scope. The group made adjustments to the proposed futures and formally recommended a set of futures for consideration at the SPC.

> **A motion to adopt the futures as outlined (Attachment – Proposed 2013 ITP20 Futures) for recommendation to the SPC was made by David Ried (OPPD) and seconded by Paul Dietz (Westar). The motion was approved unanimously.**

The five futures adopted were:

1. Business as Usual
2. Additional Wind
3. Additional Wind plus Exports
4. Combined Policy

5. Joint ESWG/MISO PAC Future

Agenda Item 4 – Joint Future with MISO meeting follow-up

David Kelly (SPP staff) followed-up regarding the joint future being developed with Midwest ISO's Planning Advisory Committee (PAC). He requested that the group provide direction for staff to move forward with a proposed meeting schedule and a "business as usual" future. Chair Alan Myers (ITC Great Plains, LLC) asked the group to provide feedback. The group provided an informal consensus that a joint "business as usual" future be pursued by staff.

Agenda Item 5 – EIPC wind integration

Doug Bowman (SPP staff) supplied an update of the EIPC's current efforts regarding wind development and transmission plans in the SPP footprint. He asked that the group continue to provide input into the process and identify any missteps as staff supports the efforts of the EIPC.

ACTION ITEM: Doug Bowman will provide an update to the ESWG at the February 9, 2012 meeting.

Adjournment

Alan Myers (ITC Great Plains, LLC) requested if any other items needed discussion at the meeting. Finding none, the meeting was adjourned at 3:07 p.m. on Thursday, January 12, 2012.

Respectfully Submitted,

Tim Miller,

Secretary

Southwest Power Pool, Inc.

ECONOMIC STUDIES WORKING GROUP

January 12, 2012

AEP Offices | 8th floor

1201 Elm Street, Dallas, TX 72501

• ATTENDANCE LIST •

Member	Representing	Participant	Representing
Alan Myers	ITC Great Plains	Josh Ross	SPP staff
Bennie Weeks	Xcel Energy	Kirk Hall	SPP staff
Bruce Walkup	AECC	Kenny Hale	City Utilities Springfield, MO
David Ried	OPPD	Kurt Stradely	LES
Kip Fox	AEP	Michael Odom	SPP staff
Kurt Stradley	LES	Mitch Williams	WFEC
Leon Howell	OGE	Paul Hassink	AEP
Paul Dietz	Westar	Paul Suskie	SPP staff
James Sanderson	KCC	Roy Boyer	Xcel Energy
Tim Miller	SPP staff	Steve Gaw	Wind Coalition
Adam McKinnie	MO PSC	Temujin Roach	Texas PUC
Bernie Ciu	Xcel Energy	Tim Owens	NPPD
Charles Cates	SPP staff	Tom Hestermann	Sunflower
Dan Jones	SPP staff	Tony Gott (AECI)	AECI
Dan Lenihan	OPPD	Trent Campbell	OK Corp. Commission
David Kelley	SPP staff		
Doug Bowman	SPP staff		

SPP Southwest Power Pool

Southwest Power Pool, Inc.
ECONOMIC STUDIES WORKING GROUP
January 12, 2012
AEP Offices | 8th floor
1201 Elm Street, Dallas, TX 72501

• ATTENDANCE LIST •

Name	System
Tim Miller	SPP staff
Michael Odom	SPP staff
Bruce Walkup	AECC
Bernie Liu	Xcel
Bennie Weeks	Xcel/SPS
Leon Howell	OG&E
Charles Cates	SPP
Mitchell L Williams	WFEC
Steve Gaw	Wind Coalition
Paul Dietz	Westar Energy
Kip Fox	AEP
Paul Hassink	AEP
Jim Sanderson	KCC
Paul Suskie	SPP Staff
Trent A. Campbell	OK. Corp. Commission
Tennyson Roach	PUCT
Alan Myers	ITC Great Plains

Southwest Power Pool

Southwest Power Pool, Inc.
ECONOMIC STUDIES WORKING GROUP
January 12, 2012
AEP Offices | 8th floor
1201 Elm Street, Dallas, TX 72501

• ATTENDANCE LIST •

Name	System
– TELECONFERENCE –	
DAVID Ried	OPPD
Kurt Stradely	LES
Kenny Hale	CITY UTILITIES
Tom Hester	SUNFLOWER
Ray Boy	XCEL ENERGY
Tony Gott	AECI
Dan Lenihan	OPPD
Tim Owens	NPPD
Don Jones	SPP staff
Kirk Hall	SPP staff
Doug Bauman	SPP staff
David Kelly	SPP staff

Southwest Power Pool, Inc.
ECONOMIC STUDIES WORKING GROUP

January 12, 2012
AEP Offices | 8th floor
1201 Elm Street, Dallas, TX 72501

• A G E N D A •

9:30 am – 3:30 pm

1. Administrative items & agenda review .... Alan Myers
   a. Attendance
   b. ESWG membership opportunities
   c. Minutes approval
   d. ESWG meeting schedule
6. RARTF recommendations related to the ESWG .... Paul Suskie
2. 2011 Probabilistic Assessment (action item) .... Michael Odom
3. 2013 ITP20 Scope development .... Josh Ross
   a. Process Overview & Strategic Approach
   b. Futures Discussion
   c. Resource Plan Process
   d. ITP20 topics for each ESWG meeting
4. Joint Future with MISO meeting follow-up (action item) .... David Kelly
5. EIPC wind integration .... Doug Bowman

Southwest Power Pool

ECONOMIC STUDIES WORKING GROUP

Proposed 2013 ITP20 Futures

January 12, 2012

2013 ITP20 Futures

- **Future 1: Business as Usual**
  - EPA Regulations
    - CSAPR (CAIR), MATS (MACT), 316b (water), Regional Haze
  - Use existing state targets for wind generation – approximately 10 GW
  - Load growth follows expectation of MDWG models
  - Include Entergy within MISO market/footprint
- **Future 2: Additional Wind**
  - Builds upon Business as Usual
  - Regional Renewable Energy Standard (RES) of 20% - approximately 17 GW

5

2013 ITP20 Futures

- **Future 3: Additional Wind plus exports**
  - Builds upon Future 2
  - Additional Wind Exports of approximately 10 GW
- **Future 4: Combined Policy**
  - 20% RPS, include DSM, load reduction and a carbon constraint.
  - Load growth reduction from Business as Usual by 1% annually
- **Future 5: Joint ESWG/MISO PAC future**
  - SPP and MISO will coordinate input assumptions and models for joint future

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ECONOMIC STUDIES WORKING GROUP

Pending Action Items Status Report

January 12, 2012

ID	Action Item	Date Originated	Status	Comments
001	ESWG directs SPP staff to write up and present the ESWG with the assumptions used for the coal and natural gas transportation costs in the ITP10 process.	Aug 2, 2011 ESWG	Complete	In ITP10 draft report
002	For discussion at the next meeting Alan Myers and staff will outline work items for the group and discuss ESWG responsibilities per the group's charter.	Aug 2, 2011 ESWG	In Progress ESWG & Staff	
003	ESWG members will review the sensitivities proposed with their companies before a formal vote at the August 30 ESWG meeting.	Aug 2, 2011 ESWG	Complete	ESWG voted and approved sensitivities on 9-26-11
004	Coordinate a meeting to discuss possible join future(s) with the Midwest ISO Planning Advisory Committee	Aug 2, 2011 ESWG	Complete	
005	Staff to write up and present the ESWG with the justification, pros/cons, and historical background for the Forty-Year Financial Analysis using the percentage growth method (Option 1).	Sep 26, 2011 ESWG	Complete	See the 2012 ITP10 report
006	Staff to prepare metric information for the Markets and Operations Policy Committee (MOPC).	Sep 26, 2011 ESWG	Complete	Provided to Oct 11-12 MOPC meeting
007	Staff will prepare a futures presentation for the SPC that will include discussion of these rules and the impact on the ITP. It should raise the issue that we think a reliability and economic look at this would be best considered as a special study.	Sep 26, 2011 ESWG	Complete	Provided at Nov 8, 2011 ESWG meeting for discussion.
008	Staff will discuss OPPD's concerns about North to South flows and overloads in the Cass county area.	Sep 26, 2011 ESWG	Complete	Staff held discussions with John Mayhan (OPPD) and collected thoughts for improving ITP moving forward.

009	Staff will update ESWG following the SPC meeting regarding these futures and continue to work out the meeting with the PAC.	Sep 26, 2011 ESWG	Complete	Provided at Nov 10, 2011 ESWG meeting
010	Staff to investigate the $/MWh relation between the importing and exporting areas to ensure that the results make sense.	Sep 26, 2011 ESWG	Complete	
011	Kip Fox (AEP) will prepare a list of concerns regarding the impact of forthcoming Environmental Protection Agency (EPA) regulations upon the ITP process	Nov 8, 2011 ESWG	Complete	Provided at Nov 10, 2011 ESWG meeting
012	SPP staff will provide their plans regarding the 2012 ITP10 and the next cycle of the ITP20.	Nov 8, 2011 ESWG	Complete	Provided at Nov 10, 2011 ESWG meeting
013	SPP staff will recap the four options identified to address the concerns regarding the forthcoming EPA regulations	Nov, 10, 2011	Complete	Provided at Dec 12, 2011 meeting
014	SPP staff to work with Mike Proctor to finalize assumptions within the forty-year financial analysis for the 2012 ITP10 and present the ESWG with the results	Nov 17, 2011	Complete	See 2012 ITP10 report.
015	SPP staff coordinate meetings between the ESWG and CAWG and present a list of proposed locations at the April 5, 2012 ESWG teleconference.	Jan 12, 2012	In Progress Staff	
016	Doug Bowman (SPP staff) will provide an update to the ESWG at the February 9, 2012 meeting.	Jan 12, 2012	In Progress Staff	

2013 ITP20 Scope

Josh Ross

February 9, 2012

Southwest Power Pool

Key Scope Sections

- Overview
- Objectives
- Stakeholder process
- Data inputs
- Analysis
- Timeline
- Deliverables
- Scope Changes – now is the time

Scope Recommendation Timeline

- Staff will recommend that the ESWG approve the scope during the March meeting
- Utilize February meeting to discuss and vet changes
- Submit changes to planning@spp.org

Overview of 2013 ITP20 (page 6)

- Integrated Transmission Planning Year 20 Assessment (2013 ITP20)
- Study Year 2033
- Report will be sent to Board of Directors in July, 2013
- 18 month schedule!

Assessment Objective (page 7)

- Develop EHV Backbone
- For a 20 year horizon
- Satisfy strategic goals of the SPPT
  - Robust transmission expansion, flexible for multiple futures
- Enhance west to east connections
- Strengthen ties to the Eastern Interconnect
- Strengthen system for future options to connect to the Western Interconnect

Stakeholder Process (pages 8-9)

- Transparency & Vetting
  - ESWG
  - TWG/MDWG
  - SSC
  - MOPC
  - SPC
  - Board of Directors
- Member Reviews
  - Load forecasts
  - Policy survey
  - Resource plan
  - Economic model
  - System constraints
  - Project development

Study Process (pages 10-11)

input assumptions

economic models

system constraints

SCUC/SCED analysis

develop EHV solutions

reliability assessment

stability assessment

2013 ITP20 expansion plan

- 40-year financial analysis
- Sensitivity analysis

Stakeholder approvals

Data Inputs (pages 12 – 17)

- Futures
- Environmental policy
- Resource plan
- System topology
- External regions
- Generation parameters
- Fuel prices
- Hurdle rates
- Load forecasts
- Market structure
- DC ties
- Benchmarking

Analysis (pages 18 – 25)

- Define constraints
- SCUC/SCED analysis
- Develop EHV solutions
- Reliability assessment
- Stability assessment
- Cost estimates
- Interregional considerations
- Recommended plan
  - Sensitivities
  - 40-year financial analysis

Timeline (page 26)

	Group to review/endorse	Start Date	Completion Date
Futures & Scope	ESWG	December 2011	February 2012
Economic Input Assumptions	ESWG	January 2012	May 2012
Policy Survey	ESWG	February 2012	March 2012
Resource Plans	ESWG	March 2012	June 2012
Model Development & Review	ESWG	April 2012	July 2012
Model Finalization	ESWG	August 2012	
Constraint Review	TWG	July 2012	August 2012
Economic Assessment Begins		Early September, 2012	
Review draft report with preliminary solutions	ESWG/TWG	December 2012	December 2012
	MOPC	January 2013	
Limited Reliability Assessment	TWG	January 2013	March 2013
Stability Assessment	TWG	January 2013	March 2013
Review revised report with solutions	ESWG/TWG	March 2013	March 2013
	MOPC	April 2013	
Final report with recommended plan	ESWG/TWG	May 2013	June 2013
	MOPC	July 2013	

Deliverables (pages 27-28)

- Data Review Packages
  - Input Data Workbook
  - Generation Data Workbook
  - Congestion Data Workbook
  - Benefits Workbook
  - 40-Year Analysis Results Workbook
- Final Report & recommended portfolio

Scope Changes (page 29)

- Help us control the process & timeline
- Scope changes will be approved by the appropriate groups
  - ESWG
  - TWG
  - MOPC
- Will mitigate risks to the quality of the study

Data Inputs, Analysis, Timeline, and Deliverables

SCOPE DETAILS

Futures Background

- ESWG recommendation of five futures was approved by the SPC
- ESWG and MISO PAC met in December to discuss Joint Future
- Future definitions differ somewhat from those used in the 2010 ITP20 and 2012 ITP10

Future 1: Business as Usual

- EPA Regulations
  - CSAPR (CAIR), MATS (MACT), 316b (water), Regional Haze
- Use existing state targets for wind generation – approximately 10 GW
- Load growth follows expectation of MDWG models
- Include Entergy within MISO market/footprint

Future 2: Additional Wind

- Builds upon Business as Usual
  - EPA regulations
  - Load growth
  - Entergy within MISO RTO
- Regional Renewable Energy Standard (RES) of 20% - approximately 17 GW

Future 3: Additional wind plus exports

- Regional Renewable Energy Standard (RES) of 20% - approximately 17 GW
  - Builds upon Future 2
    - EPA regulations
    - Load growth
    - Entergy within MISO RTO
  - Additional wind exports of approximately 10 GW

Future 4: Combined Policy

- 20% RPS, include DSM, load reduction and a carbon constraint.
- Load growth reduction from Business as Usual by approximately 1% annually
- Parts are common with Business as Usual
  - Entergy in MISO RTO
  - EPA regulations

*see attached other reference material includes DSM primer and example from Blake Elliot

Future 5: Joint ESWG/MISO PAC future

- Builds upon Business as Usual
  - EPA regulations
  - Load growth
  - Entergy within MISO RTO
  - State renewable goals/standards
- These assumptions are only for the joint future and will not constrain other SPP futures
- MISO has provided a first cut at input variables

Staff Recommendation for Future 5

- Staff recommends the MISO suggested values in the attached spreadsheet be used for joint future
- Use these SPP specific values
  - Forced retirements based upon policy survey and the same as the Future 1
  - SPP wind capacity credit of 5%, consistent with past ITP studies
  - SPP wind capacity factor based on the average seen in past ITP studies: 42%
- See spreadsheet for details

Future Weighting (pages 12 and 19)

- Weight each of the five futures out of 100 points
- Set threshold for consolidating needs across the futures
- Simple Example for a 60% threshold

	F1	F2	F3	F4	F5	Total	Fix?
Weighting	55%	15%	15%	5%	10%	100%	
Need A	✓	✓				55%+15% = 70%	Yes
Need B		✓	✓	✓		15%+15%+5% = 35%	No

Environmental Policy (page 13)

- Techniques to model rules
  - unit retirements,
  - unit derates,
  - unit fuel switching, and
  - emission price forecasts for SO2, NOX, and CO2

Gather data via policy survey

Effluent	Price per ton (2012 $)
CO_2	$42
SO_2	$500
NO_X	$3,000

Resource Plan (pages 14-15)

- Improvements over last ITP20
  - Plans for three years will be developed
    - 2023, 2028, and 2033
  - Will improve benefit forecasting efforts
- Policy survey will inform renewables and EPA regulation impacts for the business as usual future
  - Important: EPA regulation affects will be consistent through all five futures (retirements, etc.)
- Capital costs from the DOE will be utilized

System Topology (page 15)

- System base will include
  - Approved NTCs and ATPs
    - Balanced Portfolio
    - Priority Projects
    - 2012 STEP
  - 2013 ITPNT will be incorporated when available

Modeling of External Regions (pages 15-16)

- MMWG models for topology
- Focused MISO collaboration
- Publically available data
- Possible future specific changes
  - Wind modeling
  - Import/export modeling
  - EPA regulations

Note: impacts each future

Fuel Prices (page 16)

- Based on Department of Energy
  - EIA Annual Energy Outlook 2012 Early Release
- ESWG modify as needed for Futures 1 - 4

Fuel Type	$/MMBtu (2012 $)
Uranium	$0.30
Natural Gas, Henry Hub	$7.01
Central Appalachian Coal	$6.66
Powder River Basin Coal	$1.22
#2 Fuel Oil	$28.17
#6 Fuel Oil	$28.41

Hurdle Rates (page 16)

- $5/MWh commit, $8/MWh dispatch
- What we used in ITP10, and exports we had
- Set hurdle rates high between non-SPP regions

Load Forecasts (page 17)

- MDWG provided data
- Energy values developed reviewed by ESWG

Market Structure (page 17)

- Assume Integrated Marketplace is in place
- Assume Consolidated Balancing Authority is in place

DC Ties (page 17)

- Based on sold firm transmission service
- If no sold firm service on a tie, will develop a methodology to model ties consistent with the developed futures

Benchmarking (page 17)

- **Model will be benchmarked against historical system behavior to assess reasonability of the simulations**
  - **Use SPP real time, NERC, and EIA data**

Specific Benchmarks	
Capacity factor by unit type	System LMPs
Generation by unit category	Flowgate loading
Maintenance Outages	Production costs
Operating and Spinning Reserve levels	Generation dispatch order
coal transportation costs	Zonal purchases and sales

Define Constraints (page 18)

- Based on previous ITP assessments and results of initial SCUC & SCED simulations
- List limited to PTDF interface constraints, system intact, and N-1 situations
  - Contingencies that are 345 kV+
  - Monitor elements greater than 100 kV
- TWG will review the constraints and revise accordingly

Identify System Needs (pages 18-19)

- Perform SCUC/SCED for full 8,760 hours for 2033
- Reliability needs
  - Summer peak, Winder peak, Low hydro, and Peak wind
- Economic needs
  - Top 15 binding constraints for full 8,760
- Policy needs
  - Includes renewable resources with annual energy output less than 97% of targeted output

Consolidate Needs (page 19)

- **Reliability, economic, and policy needs will be consolidated across the futures**
- **Weightings and scoring thresholds table example**

	F1	F2	F3	F4	F5	Total	Fix?
Weighting	55%	15%	15%	5%	10%	100%	
Need A	✓	✓				70%	Yes
Need B		✓	✓	✓		35%	No
Need C		✓	✓			30%	No
Need D	✓				✓	65%	Yes

Project Screening (pages 19-20)

- Target needs with potential projects
  - Limited to EHV upgrades
  - Needs that could be fixed with HV projects will be restudied in future ITP10 and ITPNT
- Projects will be checked to ensure that they
  - mitigate thermal overloads or
  - provide a B/C ratio greater than 1.0 or
  - enable targeted energy output of at least 97% for one or more renewable generators

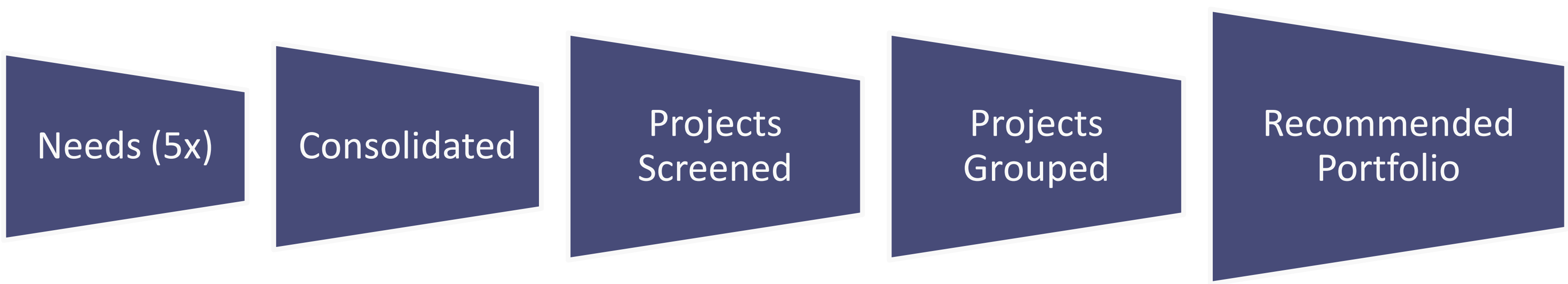
Project Alternatives (pages 19-20)

- Multiple projects may mitigate the same need
  - The most beneficial project will be pursued
- Simple Example for five needs and six projects

	P1	P2	P3	P4	P5	P6
Need A				✓		
Need B		✓				
Need C					✓	✓
Need D	✓					
Need E		✓	✓			
Net Benefit		$40M	$20M		$35M	$50M
Further Study?	yes	yes	no	yes	no	yes

Project Grouping (pages 20-21)

- Projects that met the screening criteria will be grouped together
  - Consideration of 765 kV alternatives given
  - Reliability, policy, and economic performance checked
  - Projects that do not meet needs or are redundant to other projects will identified



Reliability & Stability Assessments (page 20)

- A final reliability assessment will be conducted on the recommended portfolio to examine any potential overloads
- Stability
  - Voltage stability assessment
  - Transient stability assessment
- Additional expansion plan upgrades or modifications may result from the assessments

Recommended Portfolio (pages 22-25)

- Report detailing the results and recommendations of SPP staff
- 40-year financial analysis
  - ESWG needs to further develop process*
- Benefit metrics
- Sensitivities
  - Fuel prices, emissions taxes, demand levels, hydro outputs, DC tie interconnections

*Also impacts Regional Cost Allocation Review

Next Steps

- Staff will recommend that the ESWG approve the scope during the March
  - Finalize key assumptions
- Policy Survey
- Resource Plan

- Submit changes to planning@spp.org

Draft 2013 ITP20 Scope

February 9, 2012

SPP staff

Southwest Power Pool

Revision History

Date or Version Number	Author	Change Description	Comments
12/16/12	SPP staff	Initial draft	
01/31/12	SPP staff	Revised internal draft	
2/9/12	SPP staff	Presented to ESWG for comment	

Table of Contents

Overview

This document presents the scope for the second Integrated Transmission Planning Year 20 Assessment (ITP20). The assessment is conducted in accordance with the SPP Open Access Transmission Tariff (OATT) Attachment O, and the approved ITP Manual. The assessment will be conducted on the year 2033. This document is expected to be reviewed and approved by the Transmission Working Group (TWG) and the Economic Studies Working Group (ESWG). The assessment, or study, begins in January 2012 and is an 18 month study scheduled to be completed and approved in July 2013. It will hereafter be referred to as the 2013 ITP20.

Objective

The objective of the 2013 ITP20 is to develop an EHV backbone (345 kV and above) transmission plan for a 20 year horizon. The assessment will identify a robust, versatile transmission backbone that is capable of economically providing deliverability to an energy market and satisfying the policies outlined by the Synergistic Planning Project Team (SPPT) report[1]:

- enhance interconnections between SPP's western and eastern regions,
- strengthen ties to the Eastern Interconnection, and
- develop grid strength so that future options to connect with the Western Interconnect are available.

[1] SPP.org > Working Groups > SPPT > Project Documents > Synergistic Planning Project Team Report - Final, pages 9-10

Stakeholder Process

Working Group Involvement

ESWG

The ESWG will be responsible for review of the data and results for the following items:

1. Conduct policy survey
2. Scope
3. Futures
4. Benefit metrics
5. Sensitivities
6. Model review and assumptions
7. Resource plan review
8. Congestion analysis
9. ITP20 report

TWG/MDWG

The TWG and/or the MDWG will be responsible for review of the data and results for the following items:

1. Scope
2. Transmission topology inputs to the models
3. Load forecasts
4. Constraint assessment
5. Stability assessment
6. Final reliability assessment
7. ITP20 report

SSC

The SSC will be responsible for the review of the following:

1. Seams impacts

MOPC

The MOPC will endorse the following items:

1. ITP20 Report
2. ITP20 Expansion Plan

SPC

The SPC will provide input for the following items:

1. Futures development
2. Policy driven decisions

BOD/RSC

The BOD and/or RSC will approve the following items:

1. ITP20 Report
2. ITP20 Expansion Plan

Member Reviews

The following is a list of reviews that SPP staff will be asking of members during the 2013 ITP20 study:

Load Forecast Review

Projected demand per area will be based on the MDWG model for summer peak of 2033. Members will review projected demand per area as well as demand groups within an area, and provide feedback if needed as an input to the ITP20 models.

Policy Survey

This survey, conducted by ESWG, will be used for members to provide feedback to staff regarding policy level drivers. Members will provide feedback on current and planned renewable generation plants, renewable targets, EPA regulation impacts including unit retirements, de-ratings, and fuel switching, and other policy level drivers that will impact the study.

Generation Resource Plan Review

ESWG will review the data for all generators added to the economic model. This will include conventional and renewable generation. The review will focus on the siting and capacity of the new units.

Economic Model Review

ESWG will be provided with model data showing generators and their parameters used in the economic model. Input properties such as maximum capacity, ramp rates, O&M costs, etc. will be reviewed, and feedback provided to staff.

Constraint Assessment Review

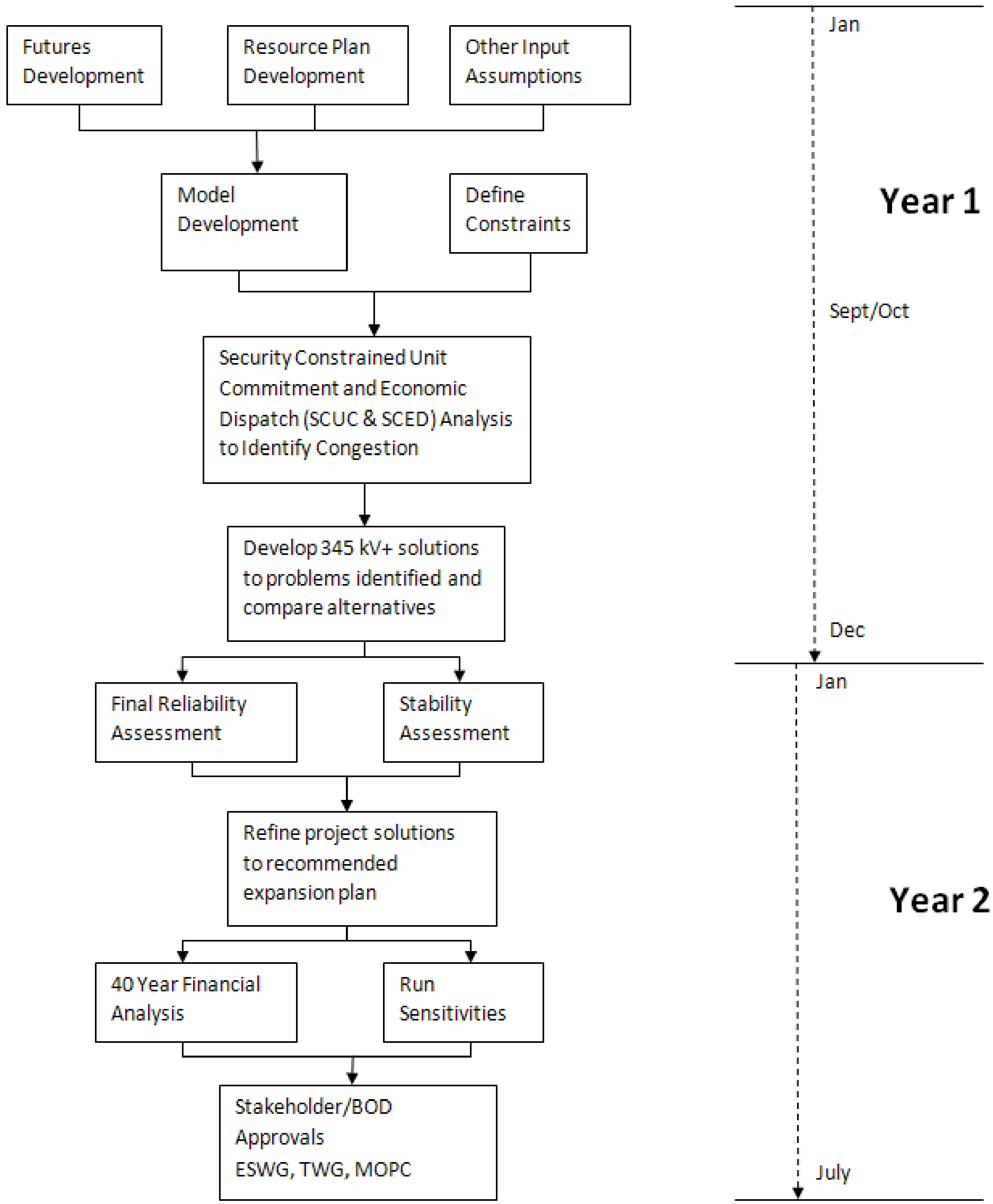
TWG will review the list of constraints to be used in the economic dispatch.

Project Development Request

Members will be asked to provide suggestions on projects they would like to see analyzed in the study. All member-submitted project requests will be analyzed to assess benefit.

Study Process

1. The input assumptions will be further refined through the various stakeholder groups (ESWG, TWG).
2. The ESWG will oversee the development of the economic models that incorporate the inputs developed in step #1 above. This will include review of input data.
3. Staff, in coordination with TWG, will develop a list of constraints to be used in the economic model dispatch.
4. Staff will use the economic model and constraints to perform an economic assessment that will identify congested facilities on the transmission system. This will be done using security constrained unit commitment (SCUC) and security constrained economic dispatch (SCED) tools over 8,760 consecutive hours.
    a. Reliability, economic, and policy needs will be identified across futures.
5. EHV solutions will be tested to assess their ability to meet needs.
    a. A single recommended portfolio will be developed from the pool of solutions in order to meet the reliability, economic, and policy needs of the system in a cost effective way.
6. A reliability assessment will be conducted to ensure that the final recommended portfolio meets reliability needs. Modifications to the expansion plan may result from the analysis.
7. A voltage stability analysis and transfer stability analysis will be conducted for the expansion upgrades. Modifications to the expansion plan may result from the analysis.
8. A 40-year financial analysis will be conducted for the recommended portfolio.
9. Sensitivity analysis will be performed on the recommended portfolio to address how versatile the plan is in handling a range of uncertainties.


Futures Development
Resource Plan Development
Other Input Assumptions
Model Development
Define Constraints
Security Constrained Unit Commitment and Economic Dispatch (SCUC & SCED) Analysis to Identify Congestion
Develop 345 kV+ solutions to problems identified and compare alternatives
Final Reliability Assessment
Stability Assessment
Refine project solutions to recommended expansion plan
40 Year Financial Analysis
Run Sensitivities
Stakeholder/BOD Approvals ESWG, TWG, MOPC
Jan
Year 1
Sept/Oct
Dec
Jan
Year 2
July

Data Inputs

The analysis for the 2013 ITP20 will consist of engineering models used to facilitate the development of long range transmission plans. The primary models will be the economic models used to come up with a market based dispatch in the analysis. These models require assumptions as to generation resources, parameters and locations (detailed in the following sections). The output of these models will allow engineers to determine the appropriate transmission needed from an economic perspective. This output can also be used to determine deliverability of the resources to market.

The major assumptions needed to construct the economic models are detailed below and contain, but are not limited to: market structure, load forecasts, fuel pricing and availability, transmission topology, resource forecasts and parameters, etc. Once these assumptions are input into a DC economic model, the model will perform a security constrained unit commitment (SCUC) and security constrained economic dispatch (SCED).

The following sections detail the parameters to be used in the economic model.

Futures

The study will be conducted on a set of futures. These future scenarios will take into account evolving changes in technology and public policy that may influence the transmission system and energy industry as a whole. By accounting for multiple futures scenarios, SPP can look at what transmission needs are for various future uncertainties. All futures will incorporate the EPA regulations lined out in the Environmental Policy section.

The futures will each be weighted based on the likelihood of occurrence, magnitude of impact, and what futures' stakeholders would like to apply the most emphasis to. This will be determined through ESWG voting. Based on the voting, each future will be weighted using a percentage, such that the sum of weights for all futures adds up to 100%. The weighting will be used in analysis to look at the significance of transmission needs and the impact of transmission upgrades.

The following five futures will be used in analysis:

Future 1: Business as Usual

This future will include all state renewable targets.

Future 2: Additional Wind

This future will incorporate renewable targets beyond the state targets used in Future 1. It will include a 20% regional Renewable Energy Standard (RES).

Future 3: Additional Wind plus Exports

This future will include the 20% RES of Future 2, plus approximately 8 GW of additional wind generation that will be exported outside of SPP. ESWG and staff will work through the details of where this wind gets exported to.

Future 4: Combined Policy

Demand Side Management and SMART grid will be incorporated into this future. This will lead to an estimated decrease in demand of approximately 1% annually. If we currently project an annual demand increase of 1.3%, the increase in demand under this future would be 0.3% annually. This amounts to approximately an 18% decrease in overall demand for the year 2033. This technology will also impact the shape of the load curve and impact peak loading. ESWG and staff will continue to work through these details of how to implement this new technology.

This future will also include the 20% RES of Future 2.

Future 5: Joint SPP/MISO Future

SPP's ESWG and MISO's PAC will coordinate input assumptions and models for a joint future. The data used in the common model is intended to be used in the models for the other futures. This future will use the same assumptions as the Business as Usual Future.

Environmental Policy

The impact of the Cross-State Air Pollution Rule (CSAPR)[2], Mercury and Air Toxics Standards (MATS)[3], Section 316(b) of the Clean Water Act[4], and EPA's Regional Haze[5] Program will be accounted for in the resource planning, production cost modeling and benefit metric calculations for all futures. Four techniques will be employed to capture these impacts:

- unit retirements,
- unit derates,
- unit fuel switching, and
- emission price forecasts for SO_2, NO_X, and CO_2

The unit retirements, derates, and fuel switching decisions will be guided by the Policy Survey and endorsed by the ESWG. The emission price forecasts based on these policies will be:

Effluent	Price per ton (2012 $)
CO_2	$42
SO_2	$500
NO_X	$3,000

Table 1: Emissions prices in cost per ton

[2] http://epa.gov/airtransport/
[3] http://www.epa.gov/mats/
[4] http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/
[5] http://www.epa.gov/visibility/program.html

Resource Plan

A resource set will be determined for use in the analysis for each future for each of the years 2023, 2028, and 2033. This resource set includes renewable and conventional generation. Existing and planned generation will be included in the resource set as deemed appropriate by SPP staff and stakeholders. Additionally, new renewable and conventional generation resources will be sited as needed.

Load forecasts for 2033 will be reviewed, and the needed generation capacity additions will be calculated assuming each SPP RTO zone must meet the 12% capacity margin requirement outlined in SPP Criteria 2.1.9. This corresponds to a 13.6% reserve margin. Capacity needs will be identified for each future for each of the years 2023, 2028, and 2033.

Renewable generation, for the purposes of this study, includes hydro, wind, solar, and bio-fuel. Designated renewable resources will be identified through the policy survey. The ownership of the generation at each wind farm will be based on the designations provided in the survey. Additional wind sites will be developed as needed to meet state and federal renewable targets. Additional wind may also be considered if it is deemed economic to do so. The wind ownership designations will be reviewed by stakeholders and posted on SPP.org.

Certain renewable generation, primarily wind, hydro, and solar, operate as energy resources that will require the development of hourly generation profiles for individual plants. The economic dispatch model will attempt to realistically model renewable generation curtailment, based on historical market behavior, expected market conditions and reliability requirements.

Policy Survey

A policy survey, developed by staff and administered by ESWG, will be used for members to provide feedback to staff regarding specific policy level information. The previous CAWG renewables surveys will be used as a reference for development of the survey. The survey will contain, at a minimum, the following information:

- Name, zone, and capacity for all specific wind sites that are in-service or expected to be on-line in the near future;
- Name, zone, and capacity for all non-wind renewables that are in-service or expected to be on-line in the near future;
- Renewable energy targets for 2033 based on state and utility targets;
- Expected unit retirements based on EPA regulations;
- Expected unit de-ratings or unit changes in fuel type based on EPA regulations;
- Any other specific changes to modeling based on policy

For all renewable sites in the models, the renewable energy output for each hour of the year 2033 will be based on the maximum capacity provided in the survey, as well as capacity factors and profiles to be developed by staff. Capacity factors and profiles will be based on expected or historical behavior. Capacity factors for wind in particular will be based on NREL wind profiles that correspond to a similar location as the wind site.

The policy survey will be used as an input to the resource plan, helping to identify retirements, renewable sites, etc. that will not only feed into the models, but also help determine the need for any additional renewable or conventional generation.

Capital Costs

New generation needs that arise as part of the resource plan will be addressed with attention paid to total capital costs. The EIA Capital Cost Estimates for Electricity Generation Plants[6], dated November 2010, provides EIA estimates of overnight capital costs that are included in the table below. For resource planning purposes, the specific prices used per plant type are less important than the prices relative to other plant types.

Plant Type	Overnight Capital Cost (2012 $/kWh)
Coal	$2,916
CC	$1,003
CT	$999
Nuclear	$5,473
IGCC	$3,302
Pumped Storage Hydro	$5,736
Conventional Hydro	$3,153
Wind	$2,499

Table 2: Overnight capital costs in 2012 $/kWh

System Topology

Power flow models will be required for the economic assessment. The starting point of these power flow models will be the latest MDWG information from Model on Demand, which includes the approved projects from the latest ITP10 and ITPNT studies. These power flow models will serve as an input into the economic (production) modeling program to develop a market based economic dispatch for the system.

2013 ITPNT projects

Late in 2012, when projects have been developed as part of the 2013 ITP Near-Term Assessment, these projects will be added to the 2013 ITP20 base models.

Modeling of External Regions

As detailed in the futures section, SPP will be coordinating a joint future with MISO. This joint future will lead to the development of a common model for both SPP and MISO. This common model is expected to be used for all futures in the ITP20. This will lead to ITP20 models in which the MISO region has been reviewed and endorsed by MISO, which should provide the most accurate modeling of MISO that can be provided. In modeling external regions besides MISO, the modeling

[6] http://www.eia.gov/oiaf/beck_plantcosts/pdf/updatedplantcosts.pdf

data will be based on publicly-available information as well as any other information obtained directly from these other regions.

As with the SPP region, the market structure used in other regions will be a day ahead market with a consolidated balancing authority per region. Parts of the Eastern Interconnect outside of SPP and Tier 1 entities may be equivalenced in the model to enable faster run times.

Generation Parameters

The parameters for each generator in the economic model (startup cost, ramp rates, O&M costs, etc.) will be updated by ESWG as part of the economic model review.

Fuel Prices

Fuel prices will be forecasted for the 2033 study year based upon the EIA Annual Energy Outlook 2012 Early Release data. The fuel forecast will be utilized in the resource planning, production cost modeling, and benefit metric calculations and will be endorsed by the ESWG.

Fuel Type	$/MMBtu (2012 $)
Uranium	$0.30
Natural Gas, Henry Hub	$7.01
Central Appalachian Coal	$6.66
Powder River Basin Coal	$1.22
#2 Fuel Oil	$28.17
#6 Fuel Oil	$28.41

*Table 3: Fuel prices for **2033 Study Year** based on AEO2012*

The delivered cost of coal will be based on the minemouth prices shown above as well as a unique adder based on the distance from the mine to each plant. The adder will be $1.30/mmBtu per 1000 miles of transport. Five regions within SPP will have unique natural gas price adjustments from the Henry Hub spot price based on the delivered cost of natural gas.

NG Price Adjustments from Henry Hub	$/MMBtu (2012 $)
Central SPP	-$0.36
North SPP	-$0.28
Nebraska	-$0.15
South SPP	-$0.10
West SPP	-$0.28

Table 4: Natural Gas Price Adjustments from Henry Hub for SPP Regions

Hurdle Rates

Hurdle rates will be utilized in the economic model between SPP and neighboring systems to help keep imports and exports at a reasonable exchange. Hurdle rates for imports and exports between SPP and other entities will be set to $8/MWh for minimum – unit commitment and $5/MWh for minimum – economic dispatch. Hurdle rates between non-SPP entities will be set as needed to model minimal and reasonable exchange between these entities.

Load Forecasts

The study will require load forecasts for SPP members and non-members within the SPP footprint, as well as areas outside of the SPP footprint, for the year 2033. SPP staff queries its members through the MDWG for appropriate load forecasts to use in each of the pricing zones for the modeling footprint. Energy forecasts will be provided by the ESWG and other SPP staff contacts.

For load forecasts for entities outside of the SPP footprint, publicly available data will be utilized as the initial source of the load forecasts, where available. If it's not available, publicly available information on projected load growth will be extrapolated to develop a good representation for load expected in the study timeframe.

Market structure

The study will take place on a time horizon of 20 years from the date the study will be presented for approval, 2033. SPP is working to implement an Integrated Marketplace and Consolidated Balancing Authority (CBA) in the year 2014. These parameters will be baseline assumptions for the analysis.

DC Ties

DC ties connect SPP to the WECC and ERCOT systems. Sold firm transmission service will be used as a basis for modeling the flow levels of the DC ties. If there is no sold firm transmission service on DC ties, ESWG will develop a methodology to model the DC ties consistent with the developed futures.

Benchmarking

After assumptions are included in the model, it will be benchmarked against historical system behavior. This benchmarking will be used to assess the reasonability of the simulations and make necessary adjustments.

In order to complete the 2013 ITP20 benchmarking effort, a model can be developed that reflects transmission in-service as of 2011. Simulation results from that economic model can be compared with historical statistics and measurements from the SPP real time data, NERC data and the Energy Information Administration data.

The ESWG will review the benchmarking data as part of the model review process. Specific benchmarks will include many, if not all, of the following: capacity factor by unit type, generation by unit category, maintenance outages, operating and spinning reserve levels, coal transportation costs, system LMPs, flowgate loading, production costs, generation dispatch order, and zonal purchases and sales.

Analysis

Define Constraints

A constraint assessment will be conducted to develop a list of constraints for use in the Security Constrained Unit Commitment and Economic Dispatch (SCUC & SCED). The list will be constructed based on previous ITP assessments and the results of initial SCUC & SCED simulations. The TWG will review the list and revise accordingly. Any changes to the list will be presented to the TWG for approval if the need for additional constraints is identified[7].

Each constraint will be identified via bus number and include normal and emergency ratings. The list will be limited to the following types of constraints:

- System Intact and N-1 situations
- Common right-of way and tower contingencies[8]
- Thermal loading and voltage stability interfaces
- Contingencies of 345 kV or higher voltages transmission lines only
- Contingencies of transformers with a 345 kV or higher voltage winding only

The list of constraints in neighboring areas will be supplied to neighboring areas for review and modification.

SCUC & SCED Analysis

The reliability, policy, economic, and strategic needs of the system will be identified in each future and consolidated in order to drive the development of the Portfolio. All of the system needs will be identified through the use of a SCUC & SCED simulation that accounts for 8,760 hours representing each hour of the year 2033. Line loading will be determined using direct current (DC) models[9].

Reliability Needs

Thermal overloads will be identified in 4 hours that represent situations that uniquely stress the grid[10]. An N-1 contingency scan of binding constraints identified in each of these hours will be conducted on a less-than-fully constrained simulation to verify the facility loading. Facilities loaded at more than 100% of the emergency rating for contingencies identified by the constraint assessment will be identified as reliability needs.

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[7] The need for additional constraints could be triggered as projects are added to the portfolio. For instance, contingencies of the new facilities would need to be included in the list. The list may also require modification following the inclusion of the 2013 ITPNT projects.

[8] The current NERC Standard TPL-001-0.1 includes outages of any two circuits of a multiple circuit tower line within Category C, and the loss of all transmission lines on a common right-of-way within category D. NERC Standard TPL-001-2 will replace this standard (pending FERC approval) and includes such outages in Category P7 and Table 1 – Steady State & Stability Performance Extreme Events.

[9] The use of an alternating current (AC) model would provide greater precision in these calculations and yields not only thermal loading, but voltage levels as well. The complexity of such a model development is not justified given the strategic rather than detailed nature of this assessment. An AC model will be utilized for the stability assessment (see below). Apart from the stability assessment to verify line loadability and general system stability, the correction of voltage limitations will be addressed in the ITP10 and ITPNT.

[10] Summer peak, winter peak, low hydro, and high wind situations have been studied in various SPP studies since 2006.

- Summer peak – highest coincident load during summer months
- Winder peak – highest coincident load during winter months
- Low hydro – highest ratio of coincident load to hydro output during summer months[11]
- Peak wind – highest ratio of wind output to coincident load

In addition, any constraints that breach for any hour (indicating that the SCED was unable to honor the facility rating) will be identified as reliability needs.

Economic needs

System congestion will be identified in each of the 8,760 hours. A list of binding constraints will be developed for each future and ranked based upon the number of binding hours and the shadow price associated with each constraint. The top fifteen constraints based upon this ranking will be identified as economic needs.

Policy Needs

Shortfall in the achievement of the renewable requirements of each future will be identified. Renewable resources that experience an annual energy output of less than 97% of the targeted energy will be identified as policy needs. The targeted energy is based on maximum capacity, capacity factor, and generation profile.

Consolidate Needs across Futures

The reliability, economic, and policy needs will be consolidated across the futures in accordance with the future weights and scoring threshold. For instance,

	Future 1 55%	Future 2 15%	Future 3 15%	Future 4 5%	Future 5 10%	Score	Further Study?
Need A	✓	✓				70%	Yes
Need B		✓	✓	✓		35%	No
Need C		✓	✓			30%	No
Need D	✓				✓	65%	Yes

Table 5 lists hypothetical needs and weights for each future. For a scoring threshold of 60%, the only needs that would move forward for further analysis and project selection are needs A (identified in futures 1 and 2) and D (identified in futures 1 and 5).

	Future 1 55%	Future 2 15%	Future 3 15%	Future 4 5%	Future 5 10%	Score	Further Study?
Need A	✓	✓				70%	Yes
Need B		✓	✓	✓		35%	No
Need C		✓	✓			30%	No
Need D	✓				✓	65%	Yes

Table 5: SCUC & SCED Analysis Scorecard

[11] Hydro generation in SWPA and WAPA will be included in the calculations to select the low hydro hour.

All of the Reliability, economic, and policy needs will be included in this scorecard. Projects will be developed for all reliability, economic, and policy needs which score higher than the threshold.

Develop 345 kV+ Solutions

Projects[12] will be proffered by staff and stakeholders based on the consolidated needs and will be tested to determine the most cost-effective set of projects. The solution set will be limited to 345 kV and higher voltage facilities. Needs that warrant lower voltage solutions will be noted and relegated to the ITP10 and ITPNT processes.

Project Screening

Each of the individual projects will be evaluated to ensure that the corresponding need is satisfied. The need must be satisfied in every future in which it was identified. Proffered projects that do not satisfy any needs will be relegated to the ITP10 and ITPNT processes.

- Projects to address reliability needs must mitigate the thermal overload and reduce loading less than 100% of the emergency rating due to the identified contingency.
- Projects to address economic needs must provide a B/C ratio greater than 1.0 by reducing the congestion. If multiple solutions meet this criteria, the project with the highest net benefit will be identified.
- Projects to address policy needs must enable the achievement of the annual energy output of at least 97% of the targeted output. Where multiple solutions meet this criteria, the project with the highest net economic benefit will be identified.

	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Need A				✓		
Need B		✓				
Need C					✓	✓
Need D	✓					
Need E		✓	✓			
Net Benefit		$40M	$20M		$35M	$50M
Further Study?	yes	yes	no	yes	no	yes

Table 6: Project Screening Dashboard

Project Grouping

Groups of the individual screened projects will be analyzed to ensure the reliability, economic, and policy needs continue to be mitigated with the full set of projects. The projects primarily driven by reliability, policy, and economic need will be incrementally reported such that the benefits and costs of each category of projects is additive: reliability alone, reliability + policy, and reliability + policy + economic. Other alternatives, such as utilization of 765 kV projects to meet needs, may be developed in this phase of the analysis.

[12] Projects refer to individual upgrades and/or upgrades meant to work in tandem.

A single recommended portfolio that best meets needs will be developed from the project groupings. Specific projects will be removed from the recommended portfolio if the behavior of the system within the context of the portfolio exhibits any of the three behaviors listed below.

- Thermal overload(s) identified with project mitigations are mitigated by other projects in the portfolio.
- Congestion targeted by a project with net benefit is relieved by other projects in the portfolio.
- Shortfall to renewable requirements resolved with project mitigations are mitigated by other projects in the portfolio.

Reliability Assessment

A reliability assessment will be conducted on the recommended portfolio to examine any potential overloads. A DC contingency scan (N-1) will be conducted with the list of constraints for each of the four peak hours, for the applicable futures detailed above. Any overloads discovered at this point will be addressed as needed in the final expansion plan to mitigate the overloads. However, no overloads are expected for these cases, as the previous analysis should have mitigated any potential overloads. This step is a final check that all reliability needs have been mitigated.

Stability Assessment

A voltage and transient stability assessment will be performed on the expansion plans.

Staff will perform a voltage stability analysis to assess the transfer limit due to transfer of wind west to east across the SPP footprint. This will be conducted for all refined project groupings for the future with the highest weighting. A line loadability analysis will also be performed as part of the voltage stability analysis. All EHV lines longer than 75 miles will be assessed to determine the maximum transfer they can provide based on line length. The models used for the voltage stability analysis will be the MDWG light load case that is the furthest out. Analysis will be conducted for a base case with no new transmission and no additional wind sited, as well as for a change case including ITP20 topology upgrades and added wind from the resource plan.

A transient stability analysis also will be performed at two yet-to-be determined transfer levels to assess the dynamic performance of SPP generators during large system disturbances. This will be conducted for the final recommended portfolio for the future with the highest weighting.

For each of the stability analyses described above, any shortcomings will be addressed to ensure the full transfer of wind resources. Additional expansion plan upgrades or modifications may result from the assessment.

Cost Estimates

The cost estimates used for projects that are tested in the initial project screening phase will be Conceptual Estimates as defined by the NTC Business Practice (revisions with new cost estimation process are expected to be approved by MOPC in early February 2012). The Conceptual Estimates will be developed by SPP staff and will use standardized estimates and multipliers that are based on historical data. Projects that pass the initial screening phase will be designated for Study Estimates as defined by the NTC Business Practice. A Study Estimate will be prepared by the designated TO(s) by completing a Standardized Cost Estimate Reporting Template (SCERT) for all upgrades that are required to complete that project. The Study Estimate will provide a more refined cost estimate for potential project approval. After a completed Study Estimate is submitted, this cost will be the only cost used for a project during the ITP20 study; the Conceptual Estimate of the project will no longer be used. For all Study Estimates, staff will provide TO's a minimum of one month from the date of request before the estimate is due.

Interregional considerations

In the development of transmission plans for the SPP footprint, SPP will review expansion plans of neighboring utilities and Regional Transmission Organizations (RTOs). Based upon that review, other external plans may be taken into account. As noted in the Futures section, SPP will be coordinating with MISO on a joint ITP20 future that will include the coordination of input assumptions and modeling.

Seams projects will be considered as part of the ITP20 study and expansion plan as potential solutions, and SPP will collaborate with neighboring entities regarding the benefits, costs, and possible inclusion of any seams projects. For the neighbors that SPP has an agreement with, joint coordination will be done in accordance with that agreement.

Final Expansion Plan

After the project groupings have been refined to a final recommended portfolio, benefit metrics will be calculated for the final plan, a 40-year financial analysis will be conducted, and sensitivities will be run to assess how versatile the portfolio is in handling a range of uncertainties.

Forty-Year Financial Analysis

The ITP20 shall assess the cost effectiveness of the recommended portfolio over a forty-year time horizon in accordance with Section III.3.c of Attachment O of the SPP OATT. To calculate the benefits over 40 years, three years will be analyzed: 2023, 2028, and 2033. Between the different years' models, transmission topology will be identical, while load will be scaled up or down, and the specific generation resource plan for that year will be utilized. The slope between the selected points will be used to extrapolate the benefits beyond 2033 over a 40 year timeframe. The costs will be calculated using the formula for Annual Transmission Revenue Requirement (ATRR). The total benefits and costs will be reported in net present value (NPV) dollars. ESWG and staff will work together to further define and develop this forty-year analysis methodology.

Benefit and impact calculations will be made on a Regional, Zonal, and State basis. State values will be extrapolated from the zonal costs and benefits. Many zones are only in one state. For those zones that are only in one state, their full portion of both costs and benefits will be allocated to the state. For zones crossing state borders, their portion of both costs and benefits will be allocated to each state based on their percentage of load that is in each state.

Net benefits and B/C ratios will be calculated based on NPV benefit and NPV cost, and will be reported based on present dollars (2012 or 2013).

Metric Development and Usage

The metrics used to measure the value of the recommended portfolio in the 2013 ITP20 are identified here, and will be vetted with the ESWG. For the 2012 ITP10, the group simplified the list of metrics used previously in order to narrow the focus of the assessment to three vital areas: cost benefits realized through various generation scenarios; the impact alternative topology will have on ATC capabilities within SPP; and the impact alternative transmission topology and congestion can have on competitiveness in the SPP market. Metrics utilized in the 2012 ITP10 are stated in this scope. Additionally, another metric that has been considered (1.1.3) may be used in the ITP20. If any other metrics are developed through the Regional Cost Allocation Review conducted during the ITP20 study, these may be used in the ITP20 as well.

Monetized Cost Benefits

Metrics CM1, 1.1.1, 1.3, and 1.6 will be calculated in the SCED simulations. The production costs, purchases, and sales of all energy within the eastern interconnect will be tracked under each transmission expansion scenario.

Metric No.	Metric Description
CM1	APC Savings
1.1.1	Value of Replacing Previously Approved Projects
1.3	Reduced Losses
1.6	Reduced Capacity Costs
10	Reduction of Emissions Rates and Values

Table 7: Monetized Cost Benefit Metrics for ITP20

Available Transfer Capability Benefits

The increases to ATC transfer capability will be calculated on the four hours utilized to identify reliability needs. Transfers will be analyzed between each SPP area as well as between each load center in SPP. Load centers will be identified through the use of Geographic Information Systems and the approximate the area around each of the large cities in SPP (see *Table 9*). Results will be reported by the largest percentage improvement in each transfer, with the MW increase also provided.

Metric No.	Metric Description
1.1.2	Value of Improved Available Transfer Capabilities
6	Limited Export/Import Improvements
14	Ability to Serve New Load

Table 8: ATC Benefit Metrics for ITP20

City	State
Fayetteville	AR
Wichita	KS
Shreveport	LA
Kansas City	MO
Springfield	MO
Omaha & Lincoln area	NE
Oklahoma City	OK
Tulsa	OK

Lubbock area	TX

Table 9: Load centers used by Metric 14

Competitive Benefits

Opportunity for competition within the footprint will be calculated as a part of the SCED simulations. The measure will record the differences in LMP price from the average and provides a qualitative and relative comparison between plans regarding which plan provides the most opportunities for generators to compete in the market.

Metric No.	Metric Description
2	Levelization of LMP's
3	Improved Competition in SPP Markets

Table 10: Competitive Benefit Metrics for ITP20

Under Consideration

Metric 1.1.3: Backstop to Catastrophic Events has been considered by SPP, and studied by an outside consultant. This metric will quantify the value of a transmission plan's ability to provide a backstop to any catastrophic events. The quantification of this metric has not been fully developed, and it will not be used in the ITP20 unless further development takes place. Additionally, any other metrics developed through the Regional Cost Allocation Review may be included in the ITP20 study. The ESWG will approve any additional metrics to be utilized.

Metric No.	Metric Description
1.1.3	Backstop to Catastrophic Events
-	Any other metrics developed through the Regional Cost Allocation Review

Table 11: Additional Metrics under consideration for ITP20

Sensitivities

Sensitivities will be developed by the ESWG and conducted on the final recommended portfolio to assess how versatile the plan is in handling a range of uncertainties. Confidence intervals for sensitivity inputs such as fuel prices and demand levels can be developed using historical market prices and demand levels from sources such as the NYMEX and FERC Form No. 714. The ESWG will consider the following sensitivities to perform on the proposed transmission plan:

- Fuel prices
- Emission taxes
- Demand levels
- Drought conditions, limiting hydro energy in SPP and Tier 1 areas.
- Implementation of Tres Amigas interconnection and/or the Clean Line HVDC line

Other sensitivities may also be conducted as developed and approved by ESWG.

Staging

Projects in the recommended portfolio will be staged as in-service for the year 2033.

Timeline

The study will begin in Jan 2012 with final results in July 2013. A rough timeline with approximate milestones is as follows:

	Group to review/endorse	Start Date	Completion Date
Futures & Scope	ESWG	December 2011	February 2012
Economic Input Assumptions	ESWG	January 2012	May 2012
Policy Survey	ESWG	February 2012	March 2012
Resource Plans	ESWG	March 2012	June 2012
Model Development & Review	ESWG	April 2012	July 2012
Model Finalization	ESWG	August 2012	
Constraint Review	TWG	July 2012	August 2012
Economic Assessment Begins		Early September, 2012	
Review draft report with preliminary solutions	ESWG/TWG	December 2012	December 2012
	MOPC	January 2013	
Limited Reliability Assessment	TWG	January 2013	March 2013
Stability Assessment	TWG	January 2013	March 2013
Review revised report with solutions	ESWG/TWG	March 2013	March 2013
	MOPC	April 2013	
Final report with recommended plan	ESWG/TWG	May 2013	June 2013
	MOPC	July 2013	

Deliverables

Policy Survey

The policy survey will be sent out to members to get member feedback regarding existing renewable generation, renewable targets, unit retirements, unit de-ratings, and fuel switches due to EPA regulations.

Data Review Packages

Stakeholders will be provided packages of data corresponding to the opportunities for review and endorsement outlined above. Multiple packages will be provided and updated throughout the study[13].

- The Input Data Workbook will include worksheets for each of these items:
  - fuel price,
  - effluent price,
  - capital costs,
  - interest rates,
  - peak demand,
  - annual energy, and
  - hurdle rates.
- The Generation Data Workbook will include worksheets for each of these items:
  - conventional generation parameters,
  - wind generation parameters,
  - resource plan,
  - generation siting, and
  - generation output statistics.
- The Congestion Data Workbook will include worksheets for each of these items:
  - constraint definitions,
  - price statistics, and
  - congestion statistics.
- The Benefits Workbook will include worksheets for the results of each benefit metric calculation identified above for the final recommended portfolio.
- A 40-Year Analysis Results Workbook will be provided for each zone showing final recommended portfolio results for:
  - Single zone 40-year benefits and costs detail
  - SPP RTO 40-year benefits and costs detail

Final Report & Recommended Portfolio

The results from the 2013 ITP20 will be compiled into a report detailing the findings and recommendations of SPP staff. The report will include a project list identifying each upgrade. In addition to the report, modeling data representing the Recommended Portfolio will be provided for the following software packages[13]:

[13] Note: execution of necessary data sharing agreements with SPP and Ventyx® are required for data access.

- automation files for PSS®E (.idv),
- powerflow models (.raw) demonstrating the topology of the system, and
- production cost modeling data for PROMOD IV (.pff, .lib, .dat, .eve)

Changes in Process and Assumptions

In order to protect against changes in process and assumptions that could present a significant risk to the completion of the ITP20, any such changes must be vetted. If a stakeholder group votes on any process steps or assumptions to be used in the study, those assumptions will be used for the 2013 ITP20. Changes to process or assumptions recommended by stakeholders must be approved by the appropriate stakeholder group and the MOPC. This process will allow for changes if they are deemed necessary and critical to the ITP, while also ensuring that changes, and the risks and benefits of those changes, will be fully vetted and discussed.

Regional Cost Allocation Review Benefit Development

(SPP RARTF report action item)

ESWG

February 9, 2012

Tim Miller, SPP staff

SPP Southwest Power Pool

Regional Cost Allocation Review

- The review will:
  - contains two evaluations,
  - be undertaken after the completion of the ITP10,
  - use the aggregate value of dollars for projects under the SPP Highway/Byway,
  - Evaluate the projects over a 40-year horizon,
  - use the most up to date information, and
  - benefits will be measured per ESWG direction

MOPC Action Item (from RARTF)

- SPP Tariff Requirement:
  - Review of cost allocation impacts
- Four Steps:
  - RARTF define the review methods
  - SPP staff perform the review
  - SPP staff Publish Reports (RTWG, MOPC, and RSC review)
  - RSC recommend remedies (if any)
    - Solutions could include, but are not limited to, adjustments to the Highway/Byway, transfer payments, approval of projects in specific zones, etc.

ESWG Task (Section 3.8 of the RARTF report)

- Determine benefit calculation methodologies
- Timeline
  - Today
    - Prioritize metrics
    - Develop plan for addressing the task
  - Finish by Oct 1, 2012
- Deliverable
  - Updated metrics manual

Overview of RARTF Report

- Final Report approved Jan. 3, 2012
  - Culmination of 9 meetings (more than 40 hours)
  - Unanimously approved at MOPC
  - Action item directed to ESWG
- Section 3 contains the bulk of information most pertinent to the ESWG task

10 Principles (Section 3.1)

1. Simplicity
2. Roughly Commensurate
3. Use Best Information Available
4. Consistency
5. Transparency
6. Stakeholder Input
7. Real Dollars
8. Consideration Give to Certain Plans
9. More Weight Should be Given to Nearer Term Projects than Future Projects
10. Equity Over Time

Two Reports will be Issued (Section 3.2)

To evaluation reports will be issued

1. NTCs
   - All SPP projects that have been issued an NTC (including NTC with Conditions, NTC-C) since June 2010
2. NTCs and Projects within 10 years
   - All SPP projects that have been issued an NTC since June 2010 and all projects that have received an ATP that have an in-service date of ten years or less from the year of the report.

NTCs weighted higher than ATPs (Section 3.3)

- Cost and Benefits Weighted
  - ATP weighting = 75%
  - NTC weighting = 100%
- Simple Example
  - ATP with a cost of $32M and benefit of $100M
  - NTC with a cost of $50M and benefit of $51M
  - The total cost and benefit calculated as follows:
    - Cost = $32M (75%) + $50M = $74M
    - Benefit = $100M (75%) + $51M = $126M
- Only applies to the second report

Baseline for Future Reviews (Section 3.4)

- "The baseline used in the first Regional Cost Allocation Review should be the same baseline used in all future reviews."
  - Subsequent reviews will include the projects evaluated in previous reviews, unless NTCs are withdrawn.
  - Projects in-service or given an NTC prior to June 2010 will be included in all reviews going forward
  - Future reviews will include projects not included in the first review (i.e. NTCs not yet determined)

Aggregate Value (Section 3.5)

- Dollars current to the year the review is conducted will be used
  - 2012 dollars for this review
- Aggregate dollars reported
  - "Using the aggregate value of dollars instead of the average B/C ratios provides a more comprehensive view of the total benefits to individual zones over the course of multiple studies."

40-Year Project Evaluation (Section 3.6)

- Consistent with the SPP OATT
  - 40-Year project life
  - The last 20 years of benefits will have a terminal value
  - ESWG needs to further develop process*
- The RARTF has not specified the details of this evaluation
- ESWG needs

* Will impact the 2013 ITP20 as well

Up to Date ATRR (Section 3.7)

- "When conducting the Regional Cost Allocation Review the RARTF recommends using the most up to date ATRR for each zone."

Benefit Calculation in Dollars (Section 3.8)

- "For metrics without dollar amount but in other terms (MW, MWh, Tons, etc.), the ESWG should consider recommending a range of values that can be used to monetize those metrics without hard dollar values."
- "For those metrics that the ESWG does not endorse monetizing, the ESWG will not provide a monetized value for use in the Regional Cost Allocation Review process."

Conservative Benefit Calculation (Section 3.8)

- "As part of the benefit evaluation, the most conservative or lowest number in any range provided by the ESWG will be used in the Regional Cost Allocation Review."
- ESWG should make clear which side of the range is more conservative from the equity standpoint

Benefit Calculation for Zones (Section 3.8)

- "In defining these benefits, the ESWG and the MOPC should also develop a method to distribute these benefits by SPP zones. For those benefits that cannot be distributed to all zones but shared by fewer than all zones, if the benefited zones agree to an alternative method for allocating the benefits, then the agreed upon method will be used."
- What is a zone?
  - Pricing zone? Balancing Authority? Other?

Benefit Categories (Section 3.8)

- Adjusted Production Cost (APC)
- Impact on Capacity Required for Losses
- Improvements in Reliability
- Remedy Benefits
- Reduction of Emission Rates & Values
- Reduced Operating Reserves
- Improvements to Import/Export Limits
- Public Policy Benefits
- *Other metrics as decided by ESWG*

Vet the Assumptions (Section 3.9)

- "The RARTF recommends that the assumptions used in the Regional Cost Allocation Review should be vetted through SPP's open and transparent stakeholder process."
- Who is in charge of what vetting?
  - ESWG
  - RTWG
  - MOPC
  - SPC

Applying the Results (Section 4)

- 4.1: Establish remedy threshold of 0.8 B/C
  - If a zone is below 0.8, a zonal mitigation will be studied
- 4.2: Consider results within the planning process
  - Review results that indicate zones less than 1.0 but above 0.8 should be considered in the planning process

Recommended Zonal Remedies (Section 5.1)

- "The potential list of remedies, listed in order of preference, that SPP staff could evaluate include, but are not limited to:"

Potential Zonal Remedies (Section 5.1)

#	Remedy	Entity
1	Acceleration of planned upgrades;	SPP BOD
2	Issuance of NTCs for selected new upgrades;	SPP BOD
3	Apply Highway funding to one or more Byway Projects;	RSC, SPP BOD & FERC
4	Apply Highway funding to one or more Seams Projects;	RSC, SPP BOD & FERC
5	Zonal Transfers (similar to Balanced Portfolio Transfers) to offset costs or a lack of benefits to a zone;	RSC, SPP BOD & FERC
6	Exemptions from cost associated with the next set of projects;	RSC, SPP BOD & FERC
7	Change Cost Allocation Percentages.	RSC, SPP BOD & FERC

Review Timeline (Section 6.1)

Regional Cost Allocation Review Action Plan											
Ref.	**Action**	**1Q11**	**2Q11**	**3Q11**	**4Q11**	**1Q12**	**2Q12**	**3Q12**	**4Q12**	**1Q13**	**2Q13**
1	Establishment of RARTF										
2	RARTF Develops Methodologies										
3	Stakeholder's Endorsement of RARTF Methodologies										
4	ESWG Determines Benefits Calculation Methodologies										
5	Staff Prepares & Implements Regional Cost Allocation Review										
6	Stakeholder Vetting of Regional Cost Allocation Review										

ESWG needs to identify the calculation of benefits by Oct 1, 2012

ESWG Action Items

- ESWG will develop methodologies for valuing reliability and public policy related projects
- Due to the significant number of reliability and public policy projects, the Regional Cost Allocation Review cannot be completed until these methodologies are developed
- The ESWG may also suggest additional metrics that should be considered in the Review

Benefit Categories (Section 3.8)

- Adjusted Production Cost (APC)
- Impact on Capacity Required for Losses
- Improvements in Reliability
- Remedy Benefits
- Reduction of Emission Rates & Values
- Reduced Operating Reserves
- Improvements to Import/Export Limits
- Public Policy Benefits
- *Other metrics as decided by ESWG*

Benefit Methodology Dashboard	Monetized	Methodology	Notes
Adjusted Production Cost	100%	100%	
Impact on Capacity Required for Losses	100%	100%	Update the $/kW capital cost, using old value.
Reduced Capacity Reserve Requirement	100%	0%	Intended to be reduced capacity margin (reserve) requirements. Capital costs available. Methodology for calculation how transmission would reduce reserves has not been developed or performed by SPP.
Reduction of Emission Rates & Values	50%	100%	Societal health benefit not yet monetized. Regulatory Impact Analysis (RIA) from the EPA could be utilized. Monetary value associated with allowance prices captured in APC.
Improvements in Reliability	0%	0%	
Improvements to Import/Export Limits	0%	25%	Methodologies exist for the calculation and identification of transfer limits but not for the monetization of the increases.
Public Policy Benefits	0%	0%	
Reduced Operating Reserve Requirement	0%	0%	Methodology to determine the reduction in the operating reserve has not been determined. The WITF report indicated that the operating reserve requirement may need to be changed, but offered to recommendation.
Other metrics as decided by ESWG	na	na	TBD
Remedy Benefits	na	na	Not applicable in this first review.

Staff Recommendation

- Prioritize Metrics
  - Confirm that 100% monetized metrics are ready-to-go
  - Add reduced capacity reserve requirement to list of potential benefit metrics
  - Weigh in on societal impact of emissions*
- Develop plan for addressing the task
  - Start a task force to address the monetization of selected metrics

*CSAPR RIA included in reference material as an example

Next Steps for the Review

- Scope Development
- Timeline
- Requirements
- ESWG approach
- Study Years
- Software
- Consultants
- Resource Plans

ESWG 2011 Organization Effectiveness

February 9, 2012

Tim Miller, SPP staff

Southwest Power Pool

ESWG Group Survey

- Completed by group members
- Covers 2011 meeting cycle

- Recurring Themes
  - Timely meeting materials needed
  - Member engagement needs to increase
  - Proper time needed for group to complete ITP studies

Changes from 2010 Survey Results

- Survey results lower
  - Meeting materials are not timely
  - Membership expertise
  - Member preparation
  - Dissenting voices are heard
  - Chair ensures follow-through on questions/commitments
- Improvements
  - Agendas more accurate
  - Chair keeps the group on task

Interregional Requirements of FERC Order 1000

ESWG

February 9, 2012

David Kelley, SPP staff

Southwest Power Pool

FERC Order 1000 Interregional Compliance

- Task assigned to Seams Steering Committee (SSC)
- Review Gap Analysis and Work Plan
  with SSC on Feb. 16
- Plan to leverage existing processes where possible
- Focused on planning requirements
  - Interregional cost allocation assigned to the RSC

ESWG Involvement

- Impacts planning processes reviewed by the ESWG
- ESWG will have multiple review opportunities
  - Iterative process throughout 2012

Compliance Process

- Developing new JOA language
- Iterative process with staff, stakeholders, and neighbors
- Meeting between SSC and seams stakeholders
  - First joint meeting on April 12 in OKC
  - Open to all SPP stakeholders