



**Southwest Power Pool**  
**ECONOMIC STUDIES WORKING GROUP**  
**June 19<sup>th</sup>, 2014**  
**Net Conference**

**• SUMMARY OF ACTIONS TAKEN •**

1. SPP Staff will determine how Alternative 2 would be utilized in the 2015 ITP10.
2. ESWG members decided to start the next face to face meeting (June 24<sup>th</sup>) at 8:30 AM instead of the regular 9:30 AM starting time.



**Southwest Power Pool**  
**ECONOMIC STUDIES WORKING GROUP**  
**June 19<sup>th</sup>, 2014**  
**Net Conference**

• MINUTES •

**Agenda Item 1 – Administrative Items**

**Agenda Item 1a - Call to Order, Introductions**

Chair Alan Myers (ITC Great Plains, LLC) called the meeting of the Economic Studies Working Group (ESWG) to order at 9:04 AM, welcomed those in attendance, and asked for introductions. (Attachment 1 – Attendance List)

There were 43 web conference participants representing 11 of 13 members.

**Agenda Item 2 – Metrics Review – Public Policy Benefits**

Antoine Lucas (SPP Staff) presented on the public policy benefit metric and recapped prior discussion on the metric. This specific metric has four proposed approaches described below:

	<b>SPP-wide Benefits</b>	<b>Zonal Allocation</b>
<b>Original RCAR I</b>	Set to cost of public policy projects	Based on share of unmet renewable mandates or goals in the <u>region</u>
<b>Alternative 1</b>	Same as in RCAR I	Based on share of unmet renewable mandates or goals <u>only in states driving the public policy projects</u>
<b>Alternative 2a</b>	Equal to total avoided wind investments <u>plus</u> assumed local transmission costs	Equal to each zone’s avoided wind investments <u>plus</u> assumed local transmission costs
<b>Alternative 2b</b>	Same as in 2a	Same as in RCAR I

A straw poll was taken to get a feel for where members stood on the metric:

1. Original RCAR I – 1 vote
2. Alternative 1 – 2 votes
3. Alternative 2a – 1 vote
4. Alternative 2b – 2 votes (plus 1 non-voting member)

ITC Great Plains abstained their vote.



New results from the Brattle Group analysis were reviewed and discussed. Tim Owens (NPPD) stated that he felt the example calculations provided some helpful information regarding the application of various alternatives from an RCAR perspective, but asked~~showed some concern about the focus of the metrics being on the RCAR II, and questioned~~ if Staff had considered how Alternative 2 would be applied in the ITP10. (Attachment 3 – 20140619 Metrics Review – Public Policy Benefits\_v2)

**ACTION ITEM: SPP Staff will determine how Alternative 2 would work in the 2015 ITP10.**

**Closing Items**

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

The meeting was adjourned at 11:05 AM.

Respectfully Submitted,

Juliano Freitas

ESWG Secretary

Name	Attendance
Aaron Doll (EDE)	WebEx
Alan Myers	WebEx
Bennie Weeks	WebEx
Bill Leung (NPRB)	WebEx
Bruce Walkup (AECC)	WebEx
Caitlin Shank	WebEx
Cindy Ireland (AR PSC)	WebEx
Clayton Mayfield	WebEx
David Treichler	WebEx
Don Frerking (KCP&L)	WebEx
Don Le	WebEx
Fultz	WebEx
Gayle Freier (SPP)	WebEx
Jason Chaplin (OCC)	WebEx
Jason Schmidt (Xcel Energy)	WebEx
Jason Shook (GDS/ETEC)	WebEx
Jason Standing	WebEx
Jeremy Severson (BEPC)	WebEx
Jerry Bradshaw	WebEx
Jim Jacoby	WebEx
Joe Lang	WebEx
John Boshears (SPRM)	WebEx
Jon Iverson	WebEx
Justin Radl	WebEx
Kevin Foflygen	WebEx
Kip Fox (AEP)	WebEx
Kurt Stradley (LES)	WebEx
Kyle Combes	WebEx
Meena Thomas	WebEx
Michael Odom (SPP)	WebEx
Michael Watt (OMPA)	WebEx
Mike Knapp (OCC)	WebEx
Mike Proctor	WebEx
Nansel	WebEx
noumvi ghomsi	WebEx
Onur Aydin	WebEx
Pat McCool	WebEx
Paul Dietz	WebEx
Randy Collier (CUS)	WebEx
Rosemary Mittal	WebEx
Sarah Pettus	WebEx
Steve Gaw	WebEx
Tim Owens (NPPD)	WebEx



**ECONOMIC STUDIES WORKING GROUP**

**June 19<sup>th</sup>, 2014**

**Conference Call**

**• A G E N D A •**

**9:00 am – 11:00 am**

1. Administrative items
  - a. Call to Order, Introductions..... Alan Myers (5 minutes)
2. Metrics Review - Public Policy Benefits ..... SPP Staff (2 hours)
3. Closing Items ..... All

# Metrics Review & Recommendations

ESWG

June 19<sup>th</sup>, 2014



Helping our members  
work together to  
keep the lights on...  
today and in the future



# Agenda

- **Introduction**
- **Assessment of benefit metrics and alternative allocation methodologies**
  - A. Benefits from Meeting Public Policy Goals

# Overview

- **ESWG has been tasked with reviewing the calculation and allocation of benefit metrics for:**
  - 2015 ITP10
  - RCAR II
- **MOPC directed ESGW to provide recommendations by July 2014**
- **Brattle is engaged for an independent assessment of alternative methodologies on “tentative metrics”**
- **Today – will discuss pros/cons of alternatives and show preliminary findings on the benefits from meeting public policy goals**



<b>Benefit Metrics</b>	<b>Calculated in RCAR I?</b>	<b>Considered for 2015 ITP10 and RCAR II?</b>	<b>Included in This Assessment?</b>
Adjusted Production Cost (APC)	✓	Yes	
Emission Rates and Values	✓	Yes	
Ancillary Service Needs and Production Costs	✓	Yes	
Avoided or Delayed Reliability Projects	✓	Yes	
Capacity Cost Savings due to Reduced On-Peak Transmission Losses	✓	Yes	
<b>A. Benefits of Mandated Reliability Projects</b>	✓	<b>Yes</b>	<b>Allocation method</b>
<b>B. Benefits from Meeting Public Policy Goals</b>	✓	<b>Yes</b>	<b>Overall approach</b>
<b>C. Mitigation of Transmission Outage Costs</b>	✓	<b>Yes</b>	<b>Allocation method</b>
<b>D. Increased Wheeling Through and Out Revenues</b>		<b>Yes</b>	<b>How to include</b>
<b>E. Marginal Energy Losses Benefits</b>		<b>Yes</b>	<b>How to include</b>
Reducing the Cost of Extreme Events		No	
Capital Savings due to Reduction of Members' Minimum Required Margin		No	
Reduced Loss of Load Probability		No	

# **A. BENEFITS FROM MEETING PUBLIC POLICY GOALS**

# RCAR I Methodology

- **Public policy benefits were set equal to the cost of public policy project**
  - Scope in RCAR I limited to using cost of public policy projects used as a proxy for benefits of being able to meet renewable energy goals
  - Benefits allocated to zones in proportion to each zone's share of unmet renewable energy goals as of June 2010
- **Limitations:**
  - Does not keep track of state(s) in which the mandate/goal drives a specific project
  - Does not recognize public policy benefits of projects other than those classified as “policy-driven” (e.g., Priority Projects)
  - Could substantially understate benefits if the least-cost alternative is to build local wind at less attractive areas

# Alternative Methods Considered

	SPP-wide Benefits	Zonal Allocation
<b>Original RCAR I</b>	Set to cost of public policy projects	Based on share of unmet renewable mandates or goals in the <u>region</u>
<b>Alternative 1</b>	Same as in RCAR I	Based on share of unmet renewable mandates or goals <u>only in states driving the public policy projects</u>
<b>Alternative 2a</b>	Equal to total avoided wind investments <u>plus</u> assumed local transmission costs	Equal to each zone's avoided wind investments <u>plus</u> assumed local transmission costs
<b>Alternative 2b</b>	Same as in 2a	Same as in RCAR I

# Public Policy Metric Status – 6/12 Recap

- **Alternative approaches 2a and 2b presented with results**
  - Minimal issues raised
- **ESWG call on 6/19 to further discuss metric**
- **Updates on this metric to be posted on 6/20 for the 6/24 ESGW meeting**

# Alternative 1

- **Total benefits are kept the same as in RCAR I**
  - \$296M based on present value of 40-yr ATRRs for the public policy projects
- **SPP-wide benefits are then allocated to only zones in which the renewable mandates or goals are driving the public policy projects**
  - New Gentleman – Cherry – Holt 345 kV line is the only project
  - This specific project is driven only by the goals in Nebraska
  - Therefore, the benefits are allocated only to Nebraska entities

	<b>Unmet Renewable Goal* (MWh)</b>	<b>Share of Unmet Renewable Goal (%)</b>	<b>Public Policy Benefit (2013 \$million)</b>
NPPD	1,374,534	48%	\$143
OPPD	1,470,070	52%	\$153
LES	0	0%	\$0
<b>Total</b>	<b>2,844,604</b>	<b>100%</b>	<b>\$296</b>

\* These numbers represent unmet goals in RCAR I report; and not updated based on ITP10 data

# Alternatives 2a-2b Wind Profile Update

## Average Wind Capacity Factors

Zone	Wind Generation Build-out Assumed to be <u>Facilitated by</u> the NTC Projects after Jun'10 (By Ownership)		Wind Generation Build-out <u>without</u> NTC Projects after Jun'10 (By Location & Ownership)	
	RCAR I Data	Updated NREL Data	RCAR I Data	Updated NREL Data
AEPW	41.6%	50.3%	44.0%	46.7%
CUS	-	-	-	-
EDE	43.1%	44.4%	37.6%	47.0%
GMO	41.4%	46.5%	37.6%	41.5%
GRDA	41.8%	51.9%	37.6%	46.5%
KCPL	44.6%	45.4%	37.6%	41.5%
LES	45.0%	47.1%	44.4%	44.1%
MIDW	-	-	-	-
MKEC	47.0%	46.3%	49.5%	47.3%
NPPD	45.6%	47.2%	46.0%	46.2%
OKGE	42.3%	51.1%	41.1%	48.1%
OPPD	45.5%	47.0%	44.4%	42.8%
SUNC	-	-	-	-
SWPS	44.0%	45.1%	42.2%	43.0%
WEFA	39.8%	48.4%	43.1%	45.3%
WRI	45.1%	45.5%	41.3%	46.8%
<b>TOTAL</b>	<b>43.5%</b>	<b>47.5%</b>	<b>41.5%</b>	<b>45.1%</b>

- NREL released new historical wind data in Q2 2014
  - 2007 – 2012 historical profiles
  - Significantly more data points spread out across region than the older NREL data
  - Higher capacity factors across the board compared to older NREL data, due to technological advances
- This newer data was too late to incorporate into the 2015 ITP10 model
  - This model utilizes the 2005 historical data from NREL that has been used in previous studies
- The newer data was utilized for computing capacity factors at load centers and wind sites to obtain an apples-to-apples differential
  - The older data had insufficient data points near load centers
  - The CF differential was used to calculate capacity cost savings for wind as part of Public Policy Benefit
  - However, the newer NREL data is not being utilized in the approved 2015 ITP10 model

# Alternatives 2a–2b

- **Benefits reflect avoided wind plant investments plus assumed avoided local transmission costs**
  - Proctor-recommended approach (May 21-22 ESWG meeting)
  - Wind investment benefits achieved by NTC projects allowing SPP members locate resources at more attractive locations
    - Driven by the difference in capacity factors (need fewer MWs in higher-capacity-factor areas to get the same amount of MWhs)
    - Estimated to be **\$348 million** based on the same wind capacity factor data as used in the RCAR I report and valuing savings at \$1,750/kW (which represents capital cost for wind generation)
    - Zonal shares can be determined either by: **(a)** calculating each zone’s avoided costs separately, or **(b)** by allocating the SPP-wide savings based on unmet renewable goals as in RCAR I
  - NTC projects also help avoid the transmission costs to integrate wind resources that would have been built locally
    - Translates to additional benefits of **\$950 million** that would have been needed to connect ~5 GW of wind capacity needed after Jun’10 (assuming local transmission costs of \$180,000/MW-wind)



# Discussion of Alternative Approaches

- **RCAR I approach is very conservative and significantly understates the public policy benefits of NTC projects (as also discussed in the RCAR I report)**
- **Linking benefits and beneficiaries at project level (Alt. 1) could address some of the concerns raised about the RCAR I approach; however it puts even more emphasis on the classification/labeling of individual projects**
- **Calculating costs that would have been incurred to integrate the same amount of wind generation locally (Proctor Alts. 2a–2b) likely a better proxy for overall benefits**
  - Captures public policy benefits provided by the NTC projects as a portfolio and does not rely on whether projects are classified as policy-driven
  - Reliability and public policy benefits are additive as long as there are no less expensive solutions that could have addressed the identified reliability needs

# SPP Recommendations

- **Expand estimation of public policy benefit consistent with Alternative 2 (Proctor approach)**
  - More comprehensively captures benefits as avoided costs of meeting public policy goals through more expensive local resources
  - Avoids reliance on project classification and project costs
- **Use Alternative 2a to allocate public policy benefits**
  - Directly links allocation of avoided wind generation investments to zones that benefit from higher capacity factors of more distant regional wind resources
  - Directly assigns benefit of avoided local transmission to zones based on avoided local wind integration needs
- **Obtain ESWG feedback on specific assumptions and calculations**

# Preliminary Results

Updated

## Wind Investment Savings and Avoided Local Transmission Costs

SPP Zone	Wind Generation Build-out Assumed to be Facilitated by the NTC Projects after Jun'10 (by Location)			Wind Generation Build-out Assumed to be Facilitated by the NTC Projects after Jun'10 (by Ownership)			Wind Generation Build-out without NTC Projects after Jun'10 (by Location & Ownership)			Capital Investment Savings on Wind Generation Build-out		Avoided Local Transmission Cost	Total Public Policy Benefits (Avoided Wind Investment plus Local Transmission Cost)	
	(MW)	(MWh)	Wind Capacity Factor (%)	(MW)	(MWh)	Wind Capacity Factor (%)	(MW)	(MWh)	Wind Capacity Factor (%)	Alt. 2a	Alt. 2b	Both Alts. 2a-2b (\$m)	Alt. 2a	Alt. 2b
										(\$m)	(\$m)		(\$m)	(\$m)
AEPW	0	0	-	509	2,241,285	50.3%	548	2,241,285	46.7%	\$69.5	\$31.8	\$98.7	\$168.2	\$130.5
CUS	0	0	-	0	0	-	0	0	-	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
EDE	0	0	-	84	327,620	44.4%	64	262,096	47.0%	\$0.0	\$4.8	\$11.5	\$11.5	\$16.3
GMO	356	1,407,148	45.1%	428	1,744,003	46.5%	384	1,395,202	41.5%	\$0.0	\$34.1	\$69.1	\$69.1	\$103.2
GRDA	0	0	-	48	218,229	51.9%	54	218,229	46.5%	\$9.9	\$0.0	\$9.7	\$19.5	\$9.7
KCPL	0	0	-	737	2,929,429	45.4%	728	2,645,277	41.5%	\$0.0	\$63.9	\$131.0	\$131.0	\$195.0
LES	0	0	-	23	94,880	47.1%	25	94,880	44.1%	\$2.7	\$0.0	\$4.4	\$7.2	\$4.4
MIDW	267	1,130,148	48.4%	0	0	-	0	0	-	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
MKEC	435	1,830,360	48.1%	104	421,812	46.3%	102	421,812	47.3%	\$0.0	\$0.9	\$18.3	\$18.3	\$19.2
NPPD	805	3,330,163	47.2%	344	1,421,798	47.2%	352	1,421,798	46.2%	\$12.9	\$30.0	\$63.3	\$76.2	\$93.3
OKGE	1,173	5,220,647	50.8%	1,041	4,662,278	51.1%	1,107	4,662,278	48.1%	\$115.4	\$71.9	\$199.2	\$314.5	\$271.1
OPPD	134	544,775	46.5%	369	1,521,058	47.0%	406	1,521,058	42.8%	\$64.4	\$32.6	\$73.1	\$137.5	\$105.7
SUNC	438	1,707,267	44.5%	0	0	-	0	0	-	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
SWPS	1,010	3,955,044	44.7%	526	2,078,874	45.1%	551	2,078,874	43.0%	\$45.0	\$0.0	\$99.3	\$144.2	\$99.3
WEFA	449	1,956,869	49.8%	231	978,274	48.4%	247	978,274	45.3%	\$27.7	\$14.4	\$44.4	\$72.0	\$58.8
WRI	109	470,825	49.4%	731	2,913,710	45.5%	711	2,913,710	46.8%	\$0.0	\$63.0	\$127.9	\$127.9	\$190.9
<b>Total</b>	<b>5,175</b>	<b>21,553,248</b>	<b>47.5%</b>	<b>5,175</b>	<b>21,553,248</b>	<b>47.5%</b>	<b>5,277</b>	<b>20,854,771</b>	<b>45.1%</b>	<b>\$347.5</b>	<b>\$347.5</b>	<b>\$949.9</b>	<b>\$1,297.3</b>	<b>\$1,297.3</b>

**Notes:**

- [1] These results are based on preliminary analysis and subject to revision.
- [2] Wind investment savings valued at \$1,750/kW and local transmission costs are assumed to be \$180/kW-wind.
- [3] Wind build-out considers the 1.25 REC multiplier for the in-state resources located in Missouri.

# Preliminary Results (cont'd)

Updated

## Public Policy Benefits and Allocation Under Alternative Methods

Zone	Public Policy Benefits (2013 \$m)				Allocation Factors (%)			
	RCAR I	Alt. 1	Alt. 2a	Alt. 2b	RCAR I	Alt. 1	Alt. 2a	Alt. 2b
AEPW	\$27	\$0	\$168	\$131	9.2%	0.0%	13.0%	10.1%
CUS	\$0	\$0	\$0	\$0	0.0%	0.0%	0.0%	0.0%
EDE	\$4	\$0	\$11	\$16	1.4%	0.0%	0.9%	1.3%
GMO	\$29	\$0	\$69	\$103	9.8%	0.0%	5.3%	8.0%
GRDA	\$0	\$0	\$20	\$10	0.0%	0.0%	1.5%	0.7%
KCPL	\$55	\$0	\$131	\$195	18.4%	0.0%	10.1%	15.0%
LES	\$0	\$0	\$7	\$4	0.0%	0.0%	0.6%	0.3%
MIDW	\$0	\$0	\$0	\$0	0.0%	0.0%	0.0%	0.0%
MKEC	\$1	\$0	\$18	\$19	0.3%	0.0%	1.4%	1.5%
NPPD	\$26	\$142	\$76	\$93	8.6%	47.9%	5.9%	7.2%
OKGE	\$61	\$0	\$315	\$271	20.7%	0.0%	24.2%	20.9%
OPPD	\$28	\$154	\$138	\$106	9.4%	52.1%	10.6%	8.1%
SUNC	\$0	\$0	\$0	\$0	0.0%	0.0%	0.0%	0.0%
SWPS	\$0	\$0	\$144	\$99	0.0%	0.0%	11.1%	7.7%
WEFA	\$12	\$0	\$72	\$59	4.1%	0.0%	5.6%	4.5%
WRI	\$54	\$0	\$128	\$191	18.1%	0.0%	9.9%	14.7%
<b>TOTAL</b>	<b>\$296</b>	<b>\$296</b>	<b>\$1,297</b>	<b>\$1,297</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**Notes:**

[1] These results are based on preliminary analysis and subject to revision.

[2] Benefits under Alternatives 2a–2b assume \$1,750/kW for wind capital costs and \$180/kW-wind for local transmission costs.

# TIMELINE & NEXT STEPS

# Next Steps

- **ESWG meeting 6/24 to finalize all metric recommendations**
- **Recommendations presented to MOPC in July**