

SEARUC Benefit-Cost Study of RTOs and SMD

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Background

Study undertaken at request of SEARUC

Study focuses on three RTOs in Southeast—SeTrans, GridSouth and GridFlorida

Study funded by SeTrans and GridSouth under agreement with SEARUC Steering Committee

Scope of Study

Southeastern region studied using GE MAPS model of Eastern Interconnection

Study period is from 2004 to 2013, with RTOs implemented in 2004 and SMD adopted in 2005

Benefits reported for native load assuming a continuation of cost-based regulation

Benefits and Costs

Benefits include production cost savings, economies in installed capacity requirements, and delay in certain transmission investments under a policy of Participant Funding

Costs include the estimated start up and operational costs of the three RTOs—about \$2 billion over 10-year study period.

Major Results

Considerable uncertainty that RTOs and SMD would provide net benefits to southeast.

GridSouth and GridFlorida native load does not benefit in most scenarios

SeTrans native load benefits in most scenarios, especially under a Participant Funding policy

Major Results (cont.)

The results are uncertain, primarily because of two factors:

- Participant Funding—will it be adopted and if so, how effective would it be?
- Amount of merchant capacity going forward in Entergy and Southern Company areas

The allocation of transmission rights will be an important determinant of native load benefits

Results with All Merchant Capacity

Table ES-1

Net 2004-2013 Benefits in RTO Cases in Comparison to No RTO Base Case
(Millions of 2003 Present Value Dollars)¹

SCENARIO		SeTrans		Grid South	Grid Florida	SEARUC		Eastern Inter-Connect.
		Native Load	Total			Native Load	Total	
2	3 RTOs w/o SMD	(889)	(704)	(372)	(273)	(1,534)	(1,349)	(1,088)
3	3 RTOs w/SMD	352	150	(286)	(25)	40	(162)	497
5	3 RTOs w/SMD & Participant Funding	1,623	1,421	(286)	(25)	1,311	1,109	1,768
<i>3 v. 2: SMD Impact</i>		<i>1,241</i>	<i>854</i>	<i>85</i>	<i>248</i>	<i>1,574</i>	<i>1,187</i>	<i>1,585</i>
<i>5 v. 3: Participant Funding Impact</i>		<i>1,271</i>	<i>1,271</i>	<i>0</i>	<i>0</i>	<i>1,271</i>	<i>1,271</i>	<i>1,271</i>

Results with Less Merchant Capacity

Table ES-2

**Net 2004-2013 Benefits in RTO Cases in Comparison to No RTO Base Case
With 7,500 MW Less SeTrans Merchant Capacity**
(Millions of 2003 Present Value Dollars)

SCENARIO		SeTrans		Grid South	Grid Florida	SEARUC		Eastern Inter-Connect.
		Native Load	Total			Native Load	Total	
9	3 RTOs w/SMD	3	170	(357)	(148)	(501)	(335)	(348)
10	3 RTOs w/SMD & Participant Funding	972	1,138	(357)	(148)	467	633	621
<i>10 v. 9: Participant Funding Impact</i>		<i>969</i>	<i>969</i>	<i>0</i>	<i>0</i>	<i>969</i>	<i>969</i>	<i>969</i>

Study Method

GE MAPS model used to estimate production cost benefits:

- Base case has “hurdle rates”—\$10/MWh for unit commitment and \$5/MWh for dispatch
- RTO case—wheeling rates eliminated
- “SMD” cases—hurdle rates lowered to \$0/\$0 within each RTO and to \$1/\$1 between RTOs

Production costs savings are about 0.5% to 1.0% of total production costs—comparable to other studies

Study Method (cont.)

Financial Evaluation Model used to assess benefits. Model accounts for:

- Generation operating costs, capital cost of new generation and any transmission upgrades needed for integration, transmission revenue requirements, wheeling revenues, and a 50/50 sharing of trade benefits

Native load is assumed to receive any operating surplus of its regulated utility with no regulatory lag—rates are assumed to be redetermined annually, in effect

Margin of Error

Technical margin of error of study is probably about \$30-50 million annually, and +/- \$100 million over 10 years

Biggest uncertainty, however, is effect of Participant Funding and number of merchants

Major Sensitivity Analysis

Table ES-3

**Sensitivity of Total SEARUC Net Benefits to Native Load
by Merchant Plant Sensitivity and Transmission Pricing Policy**
(Millions of 2003 Present Value Dollars)

PRICING POLICY SCENARIO	Merchant Plant Scenario	
	All (28,000 MW)	Reduced (20,500 MW)
Participant Funding	1,311	467
Rolled-In	40	(501)

Participant Funding Issue

Study focuses on transmission investment for integration

Transmission expansion for exports is not economical in study for either rolled-in pricing or Participant Funding

Integration investment phased in under Participant Funding, but made early under rolled-in pricing

Benefit is difference in investment timing

Benefit might be achieved in other ways

Level of Merchant Plants

About 28,000 MW of merchant capacity is due to be operational in Entergy and Southern Company by summer 2003

This is substantially in excess of local need

Transmission upgrades needed to integrate

Benefits in study substantially reduced if fewer plants decide to go forward

Other Sensitivities

Not eliminating wheeling rates between RTOs would benefit Southeast generally, but not Florida

Replacing license plate rates with postage stamp rates would shift costs substantially within RTOs

Alternative modeling of Florida-Southern Company interface does not change conclusions

Phased reduction of hurdle rates to reflect learning process reduces benefits, but does not change conclusions

Single RTO Impact shown in Table 4

Effect of a Single RTO in the Southeast

Table 4

Net 2004-2013 Benefits in 3-RTO Case in Comparison to Single RTO Case (Both with SMD)
(Millions of 2003 Present Value Dollars)

SCENARIO	SeTrans		Grid South	Grid Florida	SEARUC		Eastern Inter-Connect.
	Native Load	Total			Native Load	Total	
3 3 RTOs w/SMD	352	150	(286)	(25)	40	(162)	497
4 1 RTO w/SMD	276	41	(10)	250	515	281	1,003
<i>4 v. 3 Single RTO Effect</i>	<i>(76)</i>	<i>(108)</i>	<i>276</i>	<i>275</i>	<i>475</i>	<i>443</i>	<i>506</i>

Non-quantified Issues

Risks of CRRs—initial allocation, auction requirements, load growth availability. FERC policy is critical.

Risk of low-cost power being exported. Some form of state regulation needed.

Risk of participating in RTO's spot market. Needs oversight, but potentially would be beneficial.

Legal concerns not addressed.

Conclusions

Considerable uncertainty that benefits would exceed costs:

- GridSouth has negative net benefits in most cases
- GridFlorida has negative benefits in most cases, but is closer to breaking even
- SeTrans has positive net benefits in most cases, especially with Participant Funding

Participant Funding Benefit uncertain—could be larger, but some benefits might be achieved outside the context of RTOs/SMD

Fewer merchant plants would reduce benefits

Wheeling Rate Impact

Table 5
Net 2004-2013 Benefits in 3-RTO Case: Wheeling Rate Impact
(Millions of 2003 Present Value Dollars)

SCENARIO	SeTrans		Grid South	Grid Florida	SEARUC		Eastern Inter-Connect.
	Native Load	Total			Native Load	Total	
3 3 RTOs w/SMD	352	150	(286)	(25)	40	(162)	497
6 3 RTO/SMD w/ Wheeling rates	1,022	774	(327)	(329)	366	117	(717)
<i>6 v. 3 Wheeling Rate Effect</i>	<i>670</i>	<i>624</i>	<i>(41)</i>	<i>(304)</i>	<i>325</i>	<i>280</i>	<i>(1,214)</i>