




SOUTHWEST POWER POOL 

 **SPP** *Southwest
Power Pool*

**Webre – Wells Economic Study
Final Results**

LTTIWG Meeting – December 9, 2008

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Webre-Wells Economic Study

- 2017 Case
- Study model includes Base Plan and Supplemental Upgrade projects
- 4 Transmission Upgrade projects studied
- Must Runs not included
- Operating Procedures not included

Analysis Tool - Gridview

- Used for generation and transmission expansion planning, market simulation, and production cost modeling
- Security Constrained Unit Commitment and Economic Dispatch (SCUC&ED)
- Dispatches generation to minimize production costs while observing security constraints
- Simulates economic operation of power system
- Chronological simulation from hours to years
- Identifies areas and durations of power system congestion

Gridview Model Areas

- Entergy
 - Subdivided into 7 areas:
 - APL,MPL,LPLS,LPLN,NOPSI,GS,TX
 - Operating within Entergy Footprint
 - LAGN,WMEM,CONWY,BUBA,PUPP,DERS,DENL,CELE,LAFA,LEPA,SWPA
- Tier 1
 - SOCO,TVA,SMEPA,AEC,AMMO,AECI,BCA,SPP

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Gridview Database

- Generation**
 - All generation resources (hydro, thermal, pumped storage, and renewables) for all areas were modeled in detail
 - Data gathered from ICT, Entergy, RDI Platts, and ABB
 - Merchant generator costs include \$3 surcharge (added to O&M in model)
 - Projected fuel costs gathered from EAI (DOE)
- Transmission**
 - All transmission elements were modeled in detail as in the power flow case
 - Selected flowgates and interfaces monitored
 - Hurdle rates were \$10/MWh to/from SOCO,SPP,TVA
- Load**
 - 8760 hour load profiles used for all areas
 - 2017 forecast obtained from FERC filings and power flow case
 - 8.3% load growth increase from 2007 to 2017

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2007 Benchmark Flow

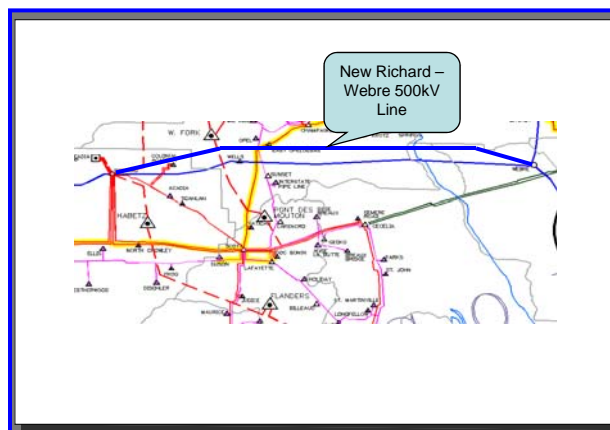
The figure displays four line graphs, each representing a different area's 2007 benchmark flow. Each graph plots flow (MW) on the y-axis against time (hours) on the x-axis, ranging from 1 to 8760 hours. The graphs compare actual 2007 flow (blue line) with a benchmark flow (magenta line).

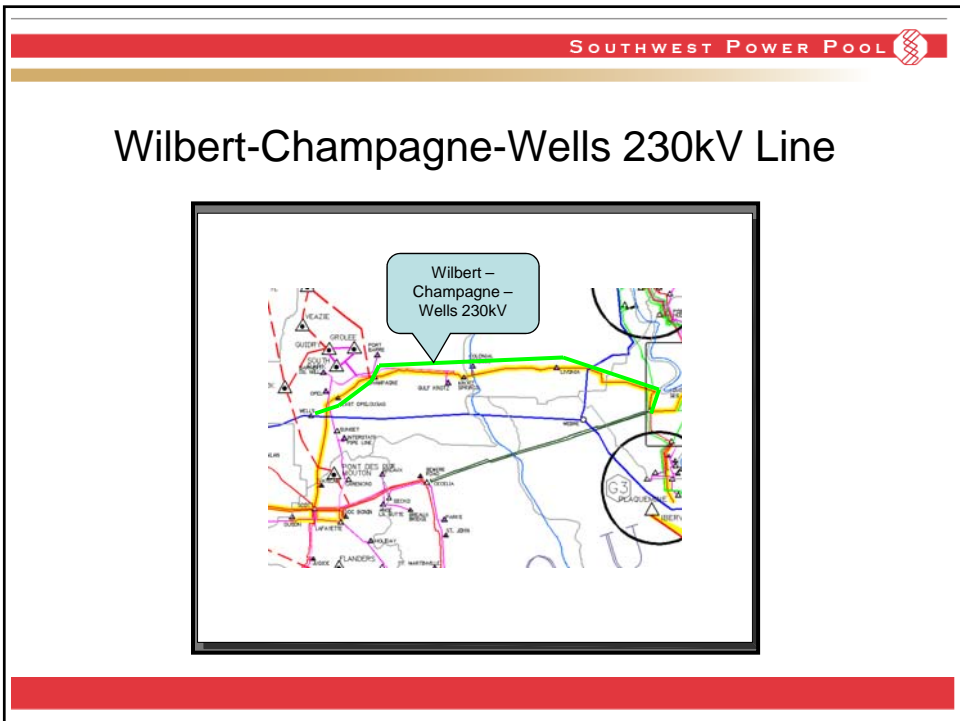
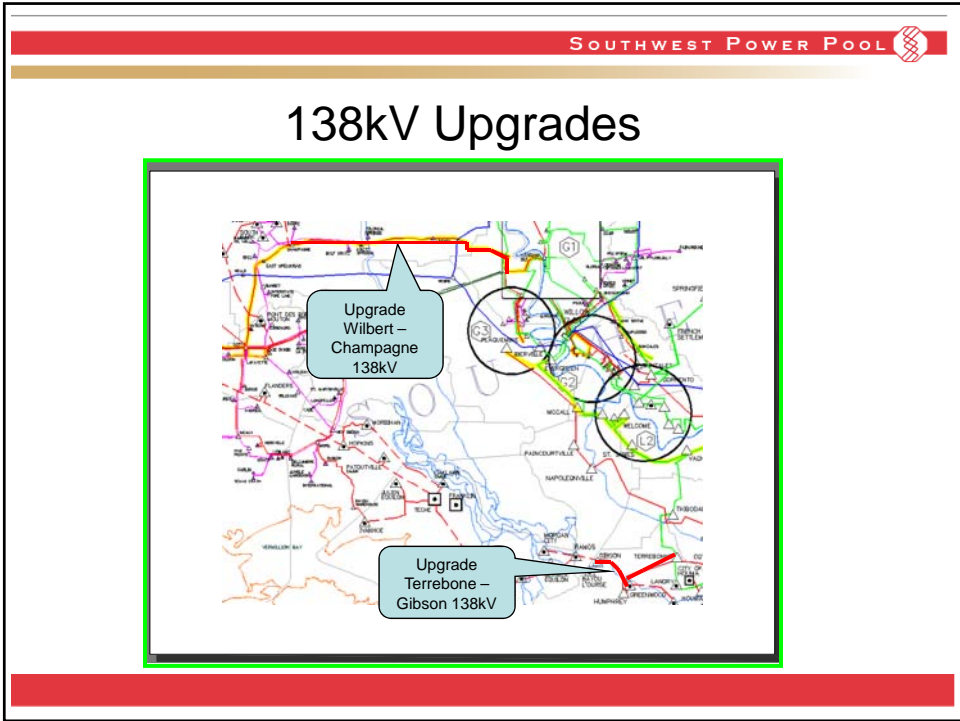
- Richard West:** The y-axis ranges from -1000 to 600 MW. The benchmark flow is generally higher than the actual 2007 flow, especially during peak periods.
- OWA-Jacoby:** The y-axis ranges from 0 to 450 MW. The benchmark flow is consistently higher than the actual 2007 flow.
- Old-New Madrid:** The y-axis ranges from -1200 to 200 MW. The benchmark flow is generally higher than the actual 2007 flow.
- Big Brown-Lakeview:** The y-axis ranges from -600 to 800 MW. The benchmark flow is generally higher than the actual 2007 flow.

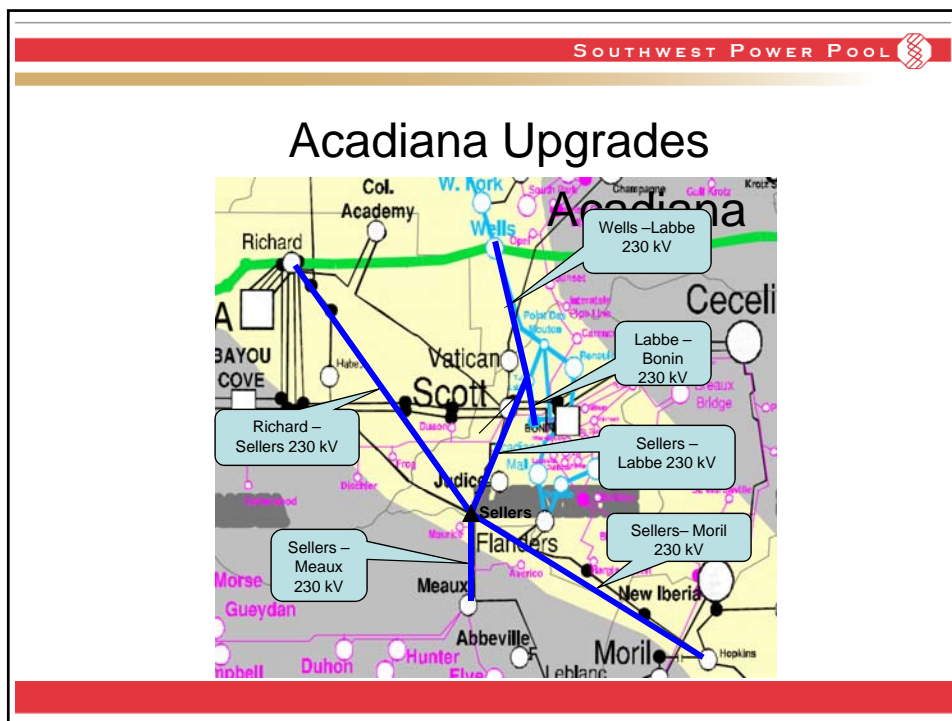
Webre – Wells Contingency Scan Summary

Option #	Webre-Richard 500	Fancy Point - Harburg 500	Upgrade Willbert-Champagn + Terrell-Gibson	Willbert-Champagn-Wells 230	Proposed Acadiana Upgrades	Year	Eliminate Overloads from Webre-Wells & Wells-Richard Contingencies?	# New Overloads	# Base Case Contingency Overloads Worsened by at least 3%	# Base Case Contingency Overloads Eliminated (in addition to WW)	# Base Case Contingency Overloads Improved by at least 3%	High-Level Planning Cost Estimate
1	X					2011	Y	7	0	22	5	\$ 350,000,000
2	X	X				2015	Y	16	27	45	3	1,150,000,000
3			X			2011	N (1 remains Gibson-Ramos)*	7	1	10	1	90,000,000
4	X		X			2015	Y	6	2	7	2	440,000,000
5		X	X			2015	Y*	7	2	11	4	890,000,000
6				X		2011	N (5 remain)	82	26	46	27	86,000,000
7	X			X		2015	Y	26	10	56	17	416,000,000
8		X		X		2015	Y*	31	12	60	19	866,000,000
9			X	X		2011	N (1 remains Terr-Green)	2	0	119	1	266,000,000
10	X		X	X		2015	Y	3	2	92	2	616,000,000
11		X		X	X	2015	Y	6	4	122	3	1,066,000,000
12	X					2015	Y	9	11	9	2	350,000,000
13				X	X	2015	Y	3	0	91	2	266,000,000

Richard-Webre 500kV Line





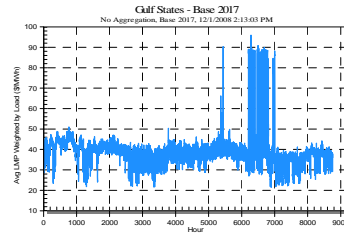
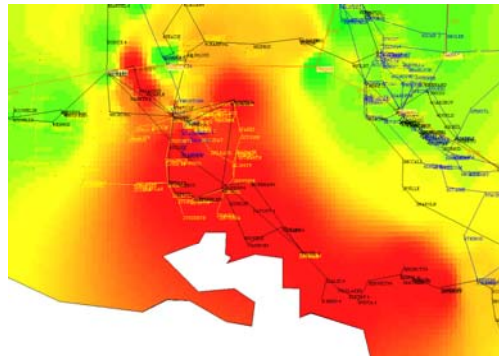


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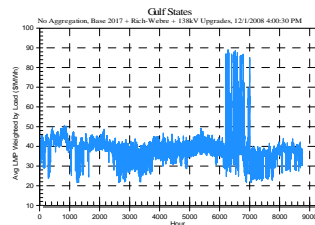
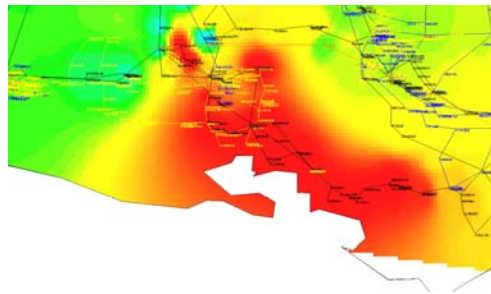
Webre Wells Area 2017 Congestion Costs and Hours

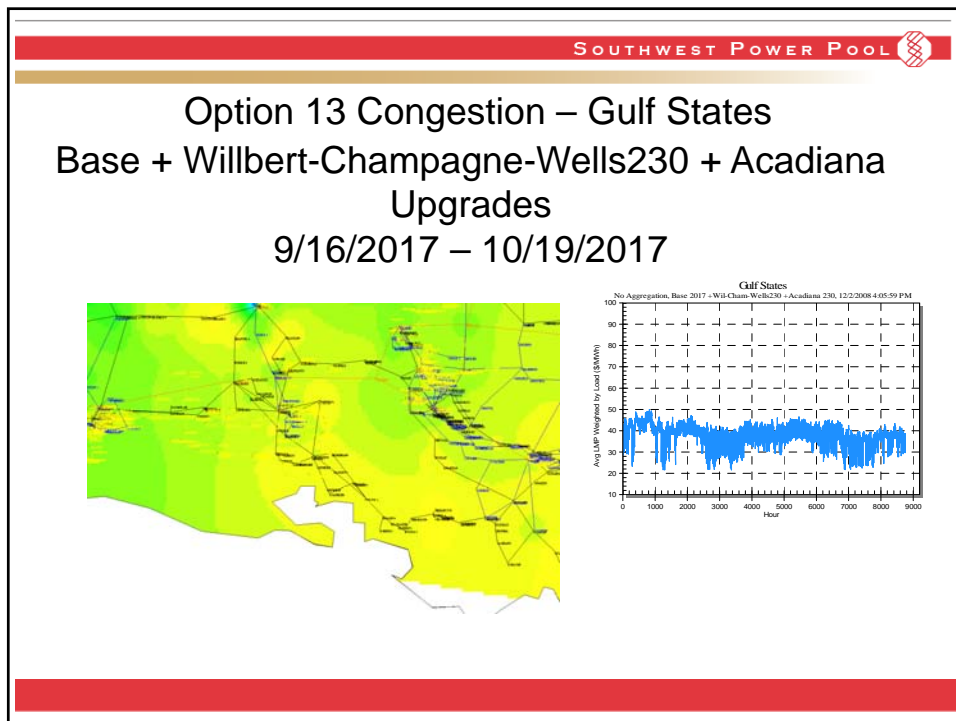
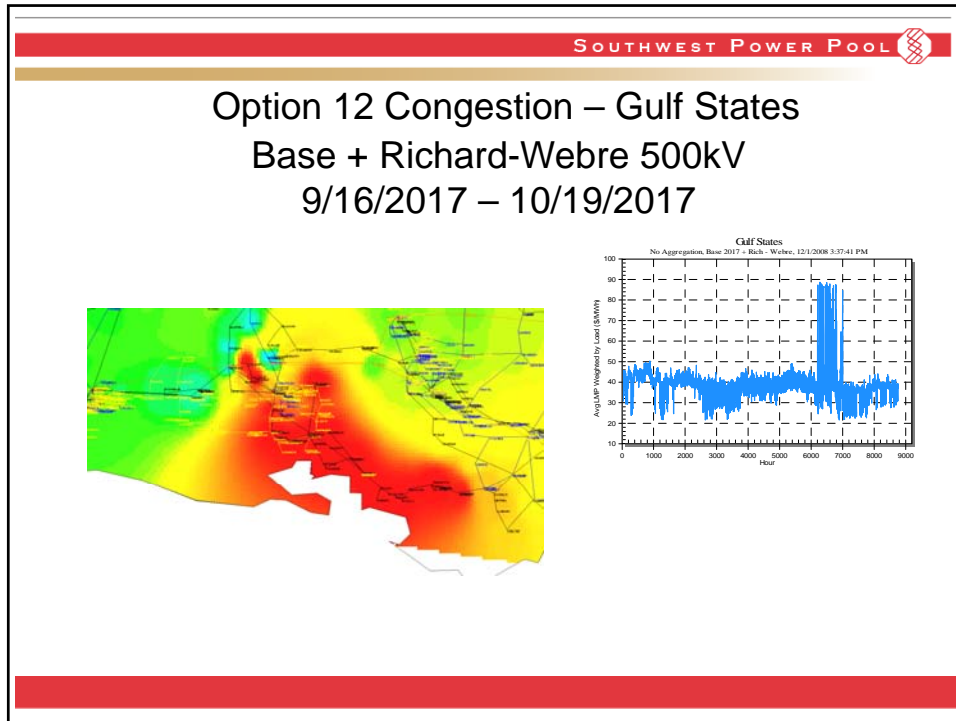
Contingency	Base 2017		Option 4 Rich-Webre 500kV +138kV Upgrades		Option 12 Rich-Webre 500kV		Option 13 Wilb-Champ- Wells230 +Acadiana Upgrades		Acadiana Upgrades Only	
	Cost (K\$)	Hours (Hrs)	Cost (K\$)	Hours (Hrs)	Cost (K\$)	Hours (Hrs)	Cost (K\$)	Hours (Hrs)	Cost (K\$)	Hours (Hrs)
BONCEC_RICCO_ENT	32,944.0	378	26,931.9	363	27,905.6	361	0.0	0	0.0	0
BONCECRICCOL_SPP	28,215.3	203	9,596.9	109	10,755.1	117	0.0	0	0.0	0
SCBSEM_WLPNT_ENT	24,589.9	2,480	29,775.3	2,707	30,361.2	2,757	0.0	0	0.0	0
SCBSEM_PNTBO_ENT	20,144.4	257	10,321.4	252	11,610.4	261	0.0	0	0.0	0
TBOGRN_WEBWL_ENT	13,129.3	1,224	186.3	10	0.0	0	836.1	181	5,402.0	1,703
WILLVB_WEBWL_ENT	7,962.3	1,516	0.0	0	0.0	0	0.0	0	6,402.0	1,166
MOHTB_WBWL_D_ENT	5,791.5	546	0.0	0	0.0	0	0.0	0	6,113.9	599
BVRJE_WEBWLS_ENT	731.9	7,035	0.0	0	0.0	0	466.5	5,715	889.3	7,123
SCBBON_WLPNT_ENT	311.3	29	0.0	0	0.0	0	0.0	0	0.0	0
MTOHTB_WEBWL_ENT	0	0	0.0	0	0.0	0	0.0	0	137.7	25
Total	\$133,819.8	13,668	\$76,811.8	3,441	\$80,632.3	3,496	\$1,302.6	5,896	\$18,944.9	10,616

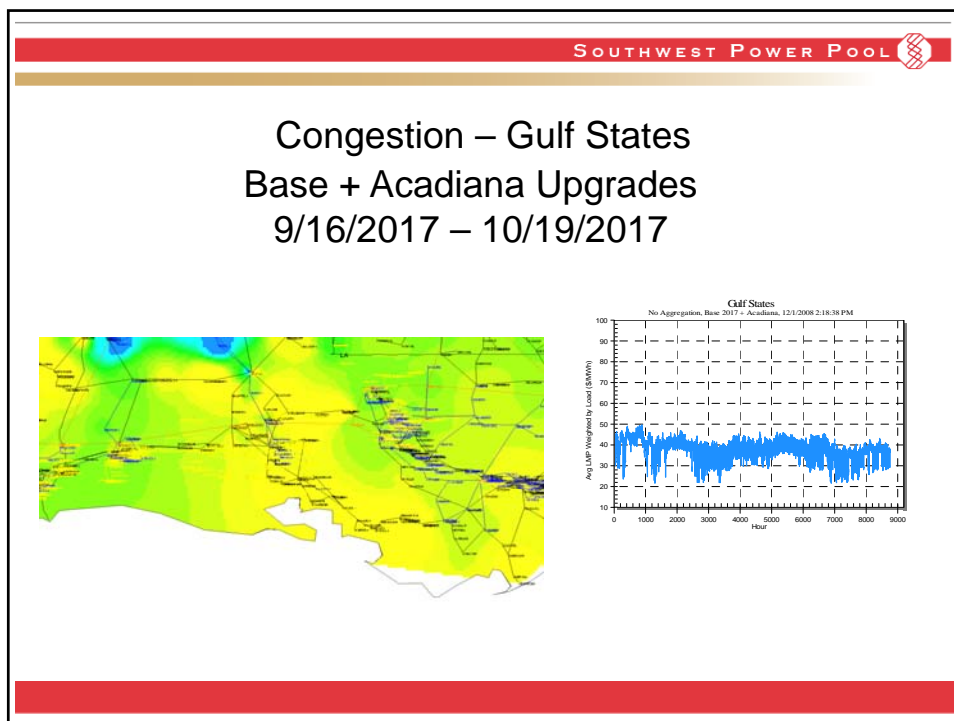
Base Case Congestion – Gulf States 9/16/2017 – 10/19/2017



Option 4 Congestion- Gulf States Base + Richard-Webre 500kV +138kV Upgrades 9/16/2017 – 10/19/2017







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Entergy System Upgrade Benefits

Option	Case	Upgrade Cost Estimate Mill\$	2017 Congestion Cost Mill\$	Congestion Cost Reduction From Base Mill\$	Simple Payback Years
Base	2017 Base Case		454		
4	Base + Rich-Webre 500 +138kV Upgrades	440	406	48	9.2
12	Base + Rich-Webre 500	350	410	44	8.0
13	Base + Wilbert-Champ-Wells 230 + Acadiana Upgrades	266	337	117	2.3
	Base + Acadiana Upgrades	200	347	107	1.9