




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

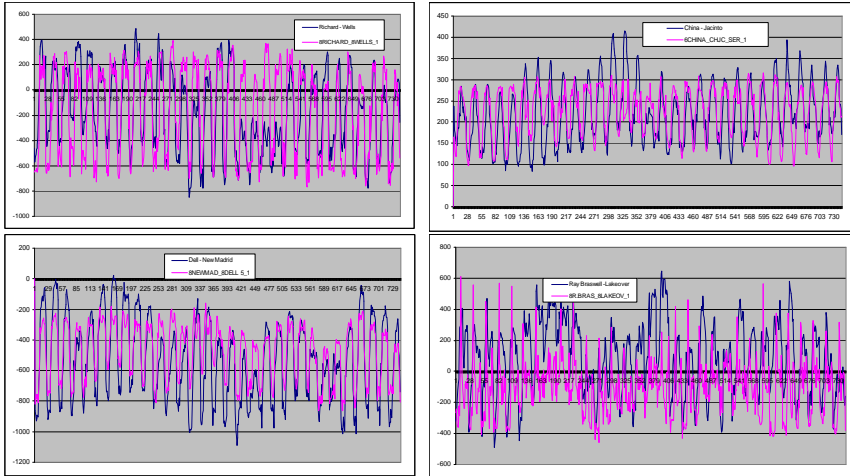
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## Gridview Database

- 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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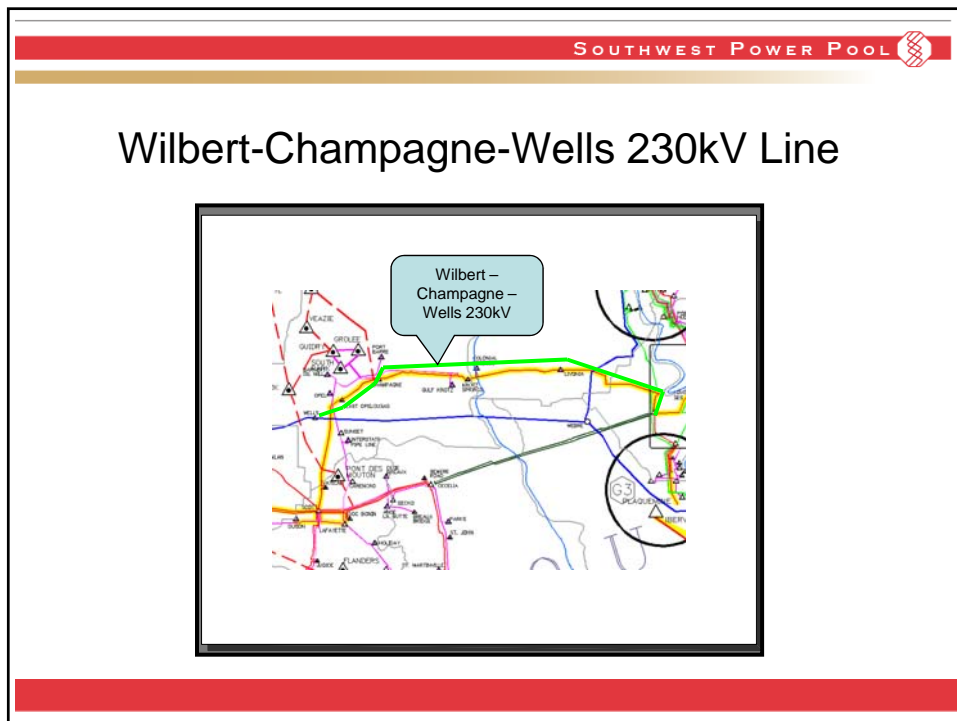
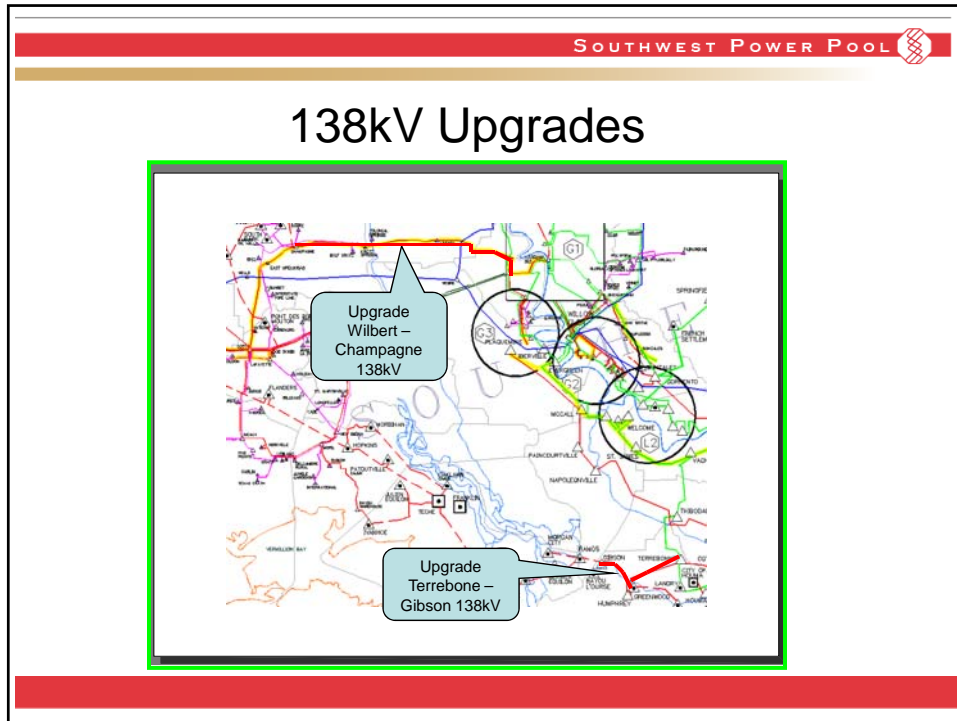
## 2007 Benchmark Flow

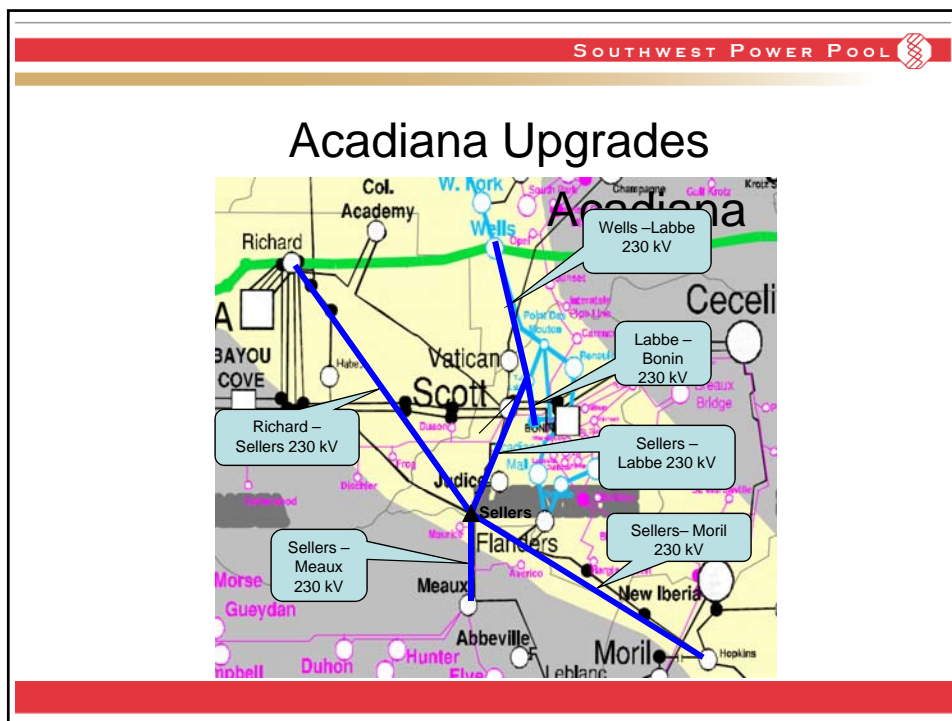


The figure consists of four sub-charts, each showing the flow (MW) over time (hours) for a specific area in 2007. The x-axis for all charts represents hours from 1 to 720. The y-axis represents flow in MW, with varying scales for each chart. Each chart compares two scenarios: BEHWAID\_SELL\_1 (represented by a blue line) and BEHWAID\_BUY\_1 (represented by a pink line).

- Richard West:** The y-axis ranges from -1000 to 600 MW. The flow fluctuates significantly, with peaks around 400 MW and troughs around -600 MW.
- OWA-Jacoby:** The y-axis ranges from 0 to 450 MW. The flow fluctuates between approximately 100 MW and 400 MW.
- Old-New Madrid:** The y-axis ranges from -1200 to 200 MW. The flow fluctuates between approximately -1000 MW and 100 MW.
- Big Brown-Lakeview:** The y-axis ranges from -600 to 800 MW. The flow fluctuates between approximately -400 MW and 600 MW.



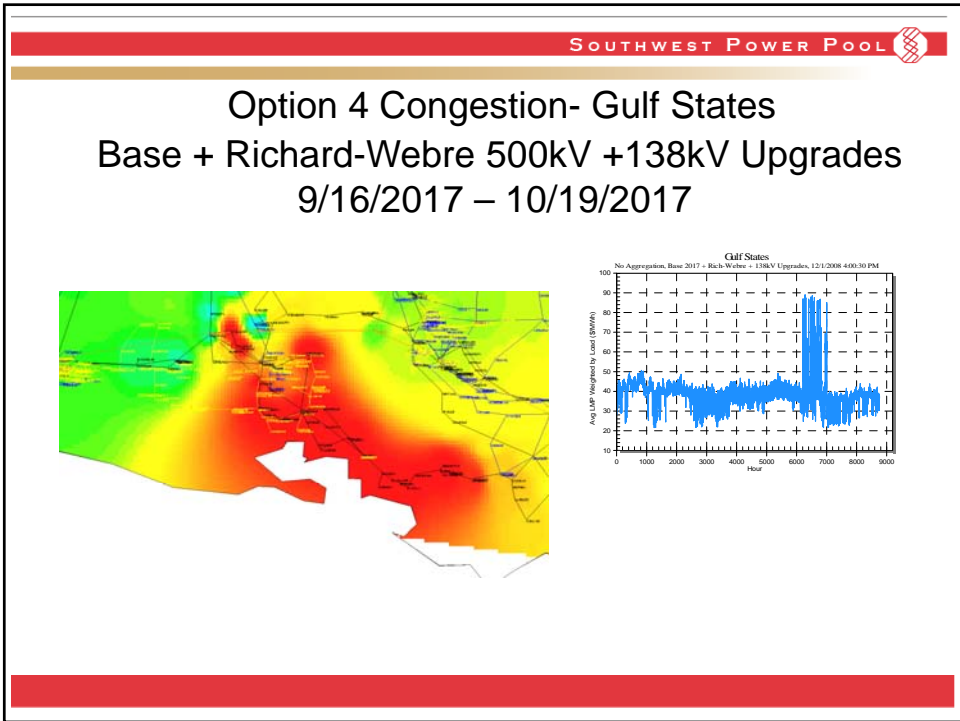
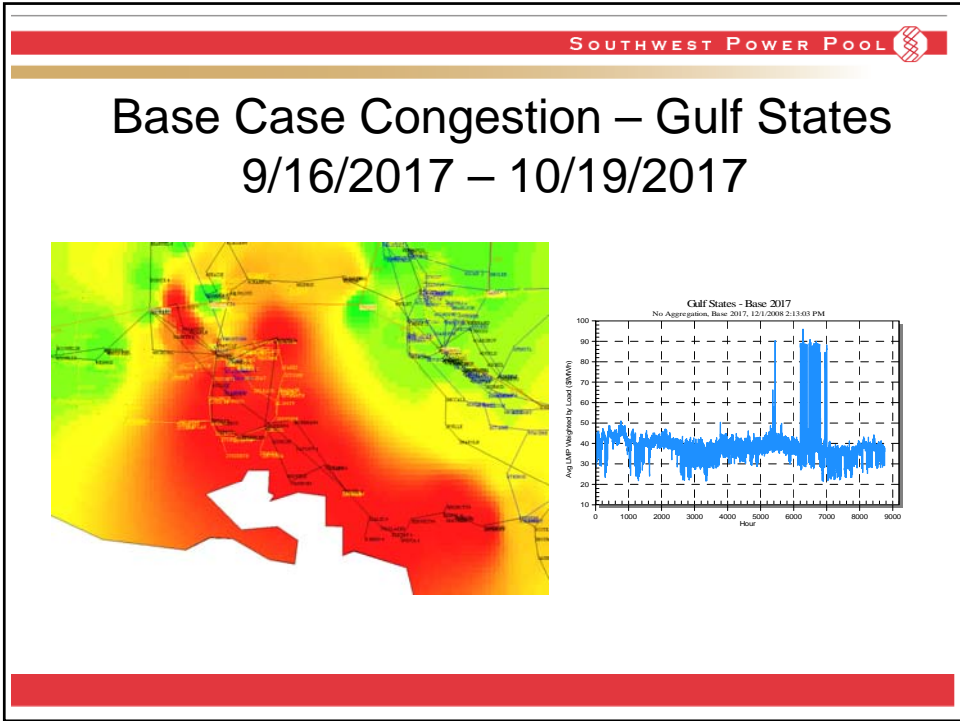


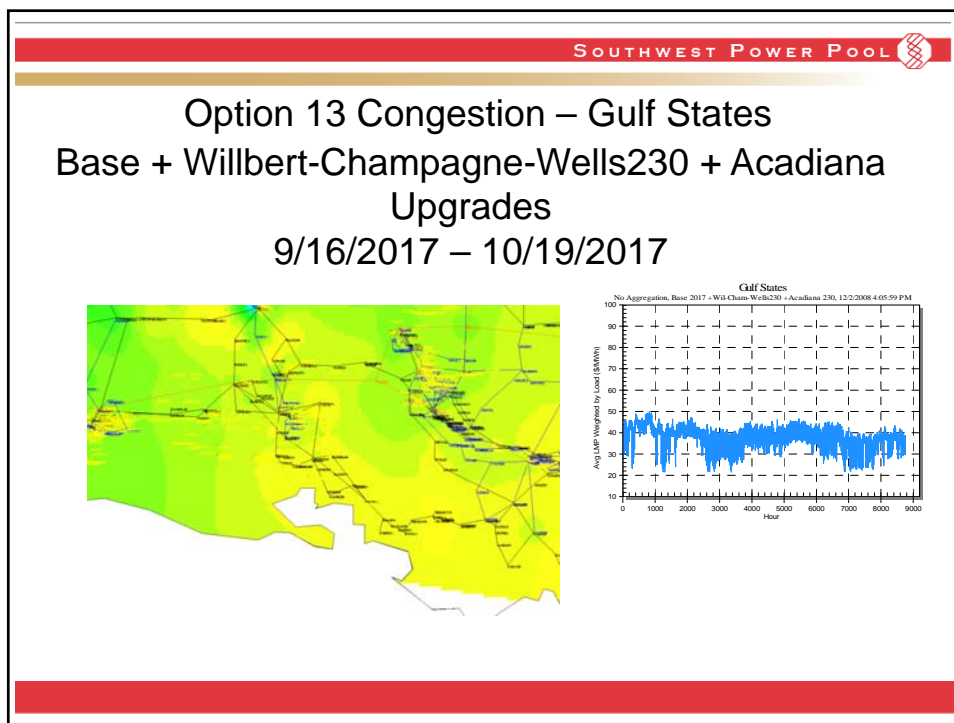
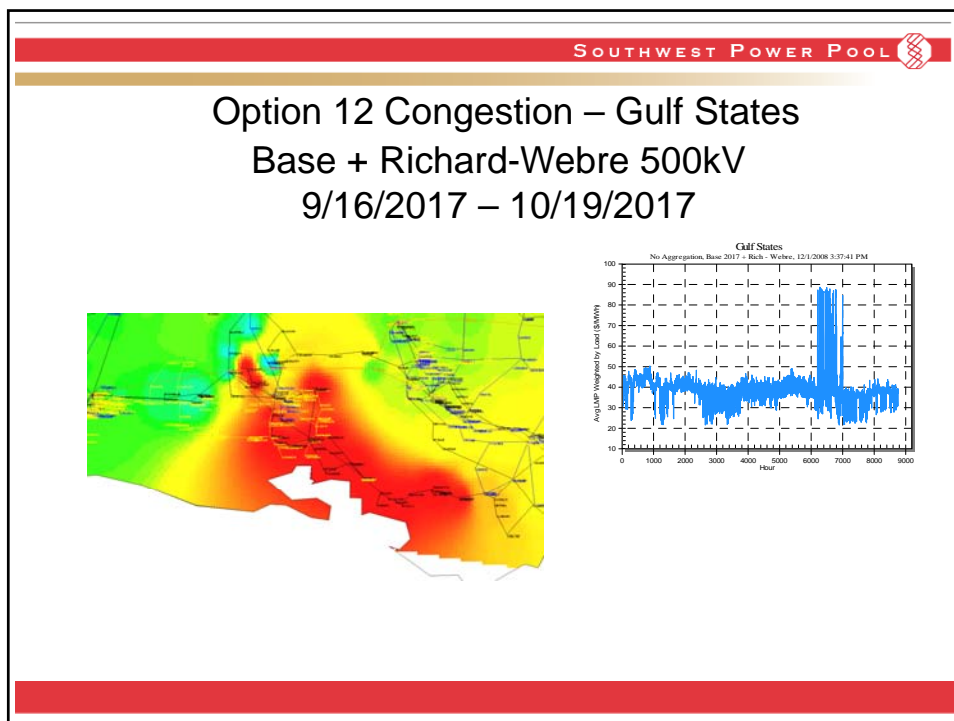


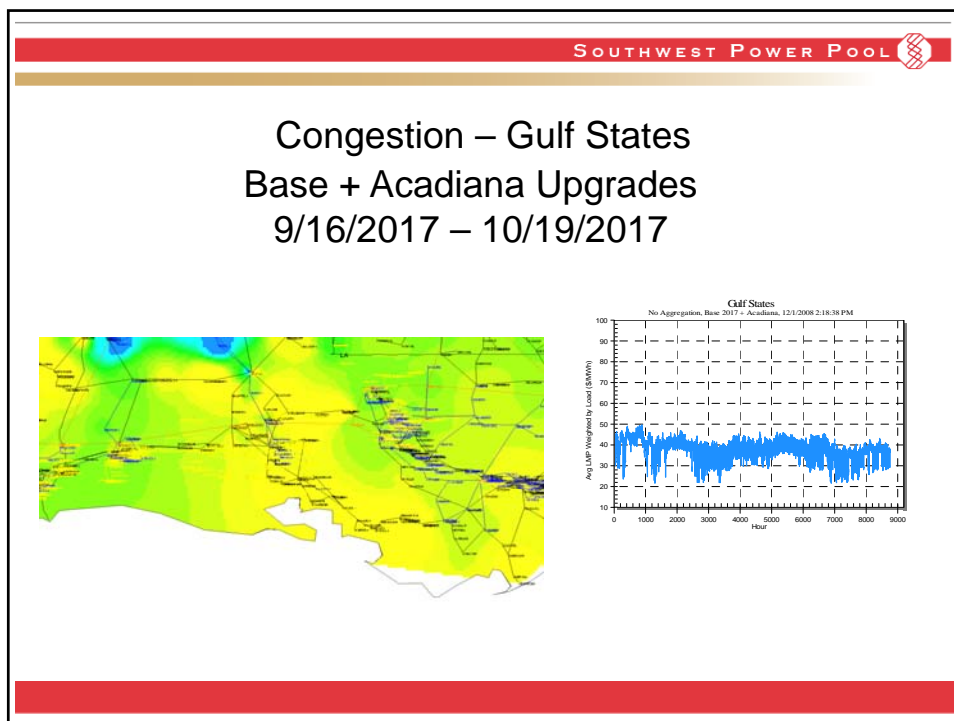
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## Webre Wells Area 2017 Congestion Costs and Hours

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
<b>Total</b>	<b>\$133,819.8</b>	<b>13,668</b>	<b>\$76,811.8</b>	<b>3,441</b>	<b>\$80,632.3</b>	<b>3,496</b>	<b>\$1,302.6</b>	<b>5,896</b>	<b>\$18,944.9</b>	<b>10,616</b>







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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