Major Planning Studies Update

11/14/2006

3 Studies

1. Competitive Renewable Energy Zones (CREZ) Study
2. Long Term System Assessment (LTSA) Summary
3. Entergy Integration Study Summary

2005 Legislative Requirements

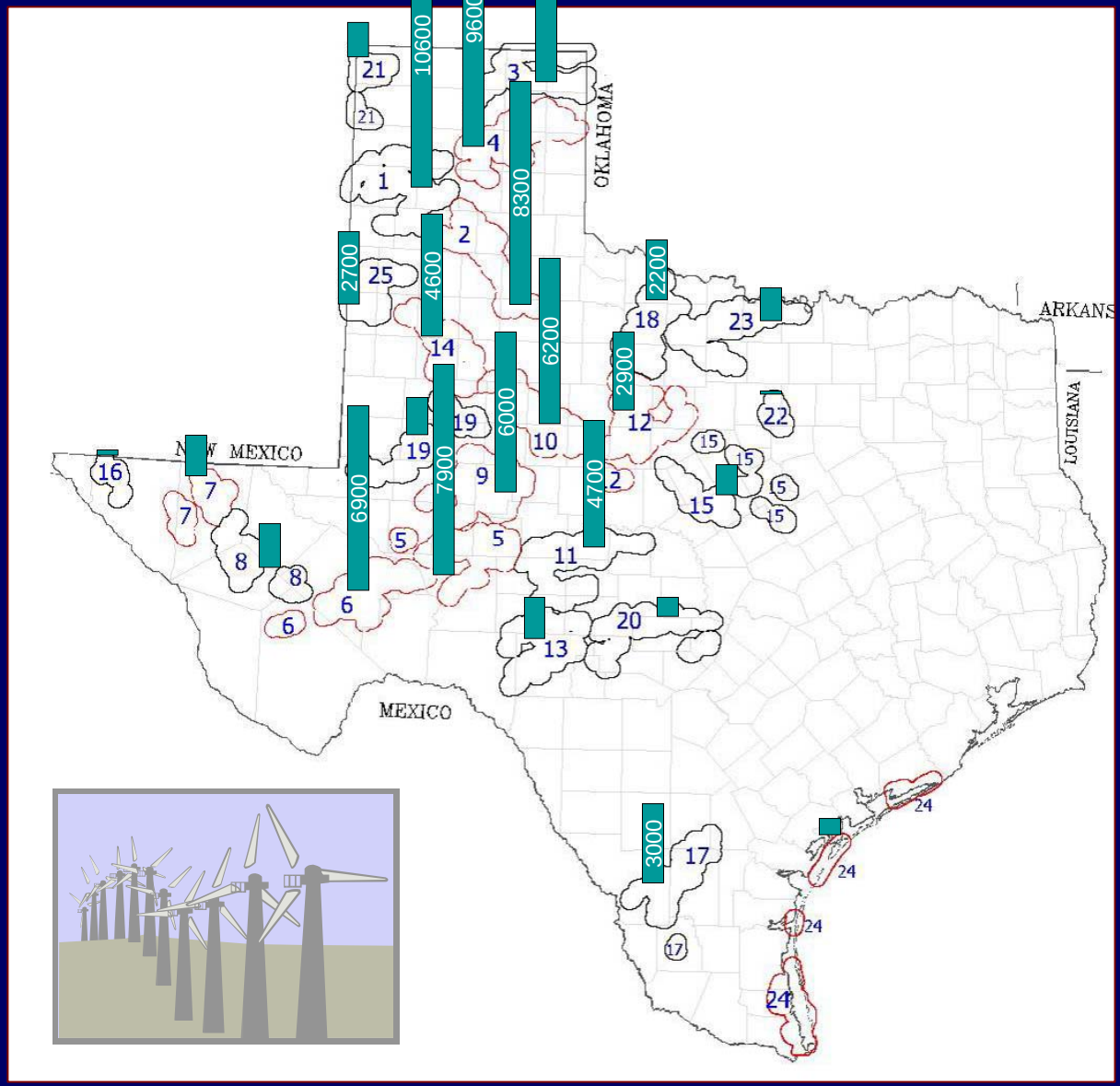
Section 39.904

(g) The (Public Utility) commission, after consultation with each appropriate independent organization, electric reliability council, or regional transmission organization:

(1) shall designate competitive renewable energy zones throughout this state in areas in which renewable energy resources and suitable land areas are sufficient to develop generating capacity from renewable energy technologies;

(2) shall develop a plan to construct transmission capacity necessary to deliver to electric customers, in a manner that is most beneficial and cost-effective to the customers, the electric output from renewable energy technologies in the competitive renewable energy zones

Potential Wind Resource



- ERCOT contracted with leading wind consultant AWS Truewind to identify areas with best wind resource potential
- AWS identified highest CF 100MW sites and clustered into 25 areas
- Identified 4000MW of highest CF sites in each area (shown on map)
  - Approximate wind capacity potential(in MW) with >35% capacity factor in each area is shown

CREZ Analytical Process

- Base Case is the 2009 Case from the 5-Year Plan
  - Latest Validated Case when CREZ Analysis Process Began
  - Contains 4,850 MW of Installed Wind Capacity
- Overall Strategy – to develop incremental transmission solutions that are part of an overall design
  - No large steps and no regrets
- We evaluated constraints on 69 kV and 138 kV lines, but focused on 345 kV (in some cases 765 kV) solutions

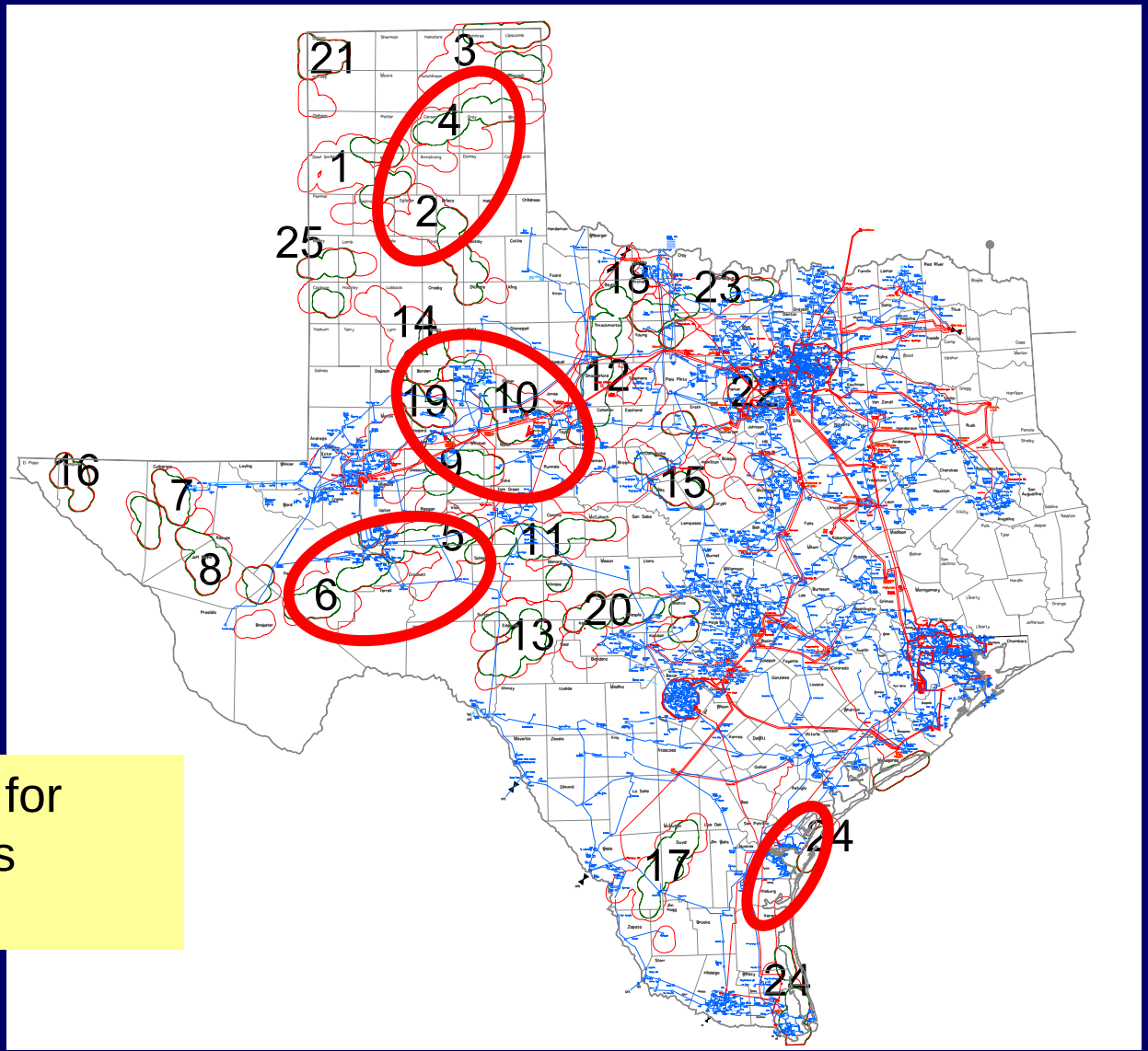
Other Considerations/Caveats

- Transmission solutions presented here are the result of extensive what-if analyses, followed by iterations (and iterations) of economic modeling and power-flow studies
  - Over 60 different configurations evaluated for the McCamey area alone
- Due to responsive reserves on the system, we limited the flow on radial lines to a maximum of 1,500 MW
- Transmission studies were conducted primarily using thermal (DC) analysis
- Other system considerations that will need to be addressed
  - Voltage Stability
  - Dynamic Stability
  - Ancillary Services

Network Upgrades

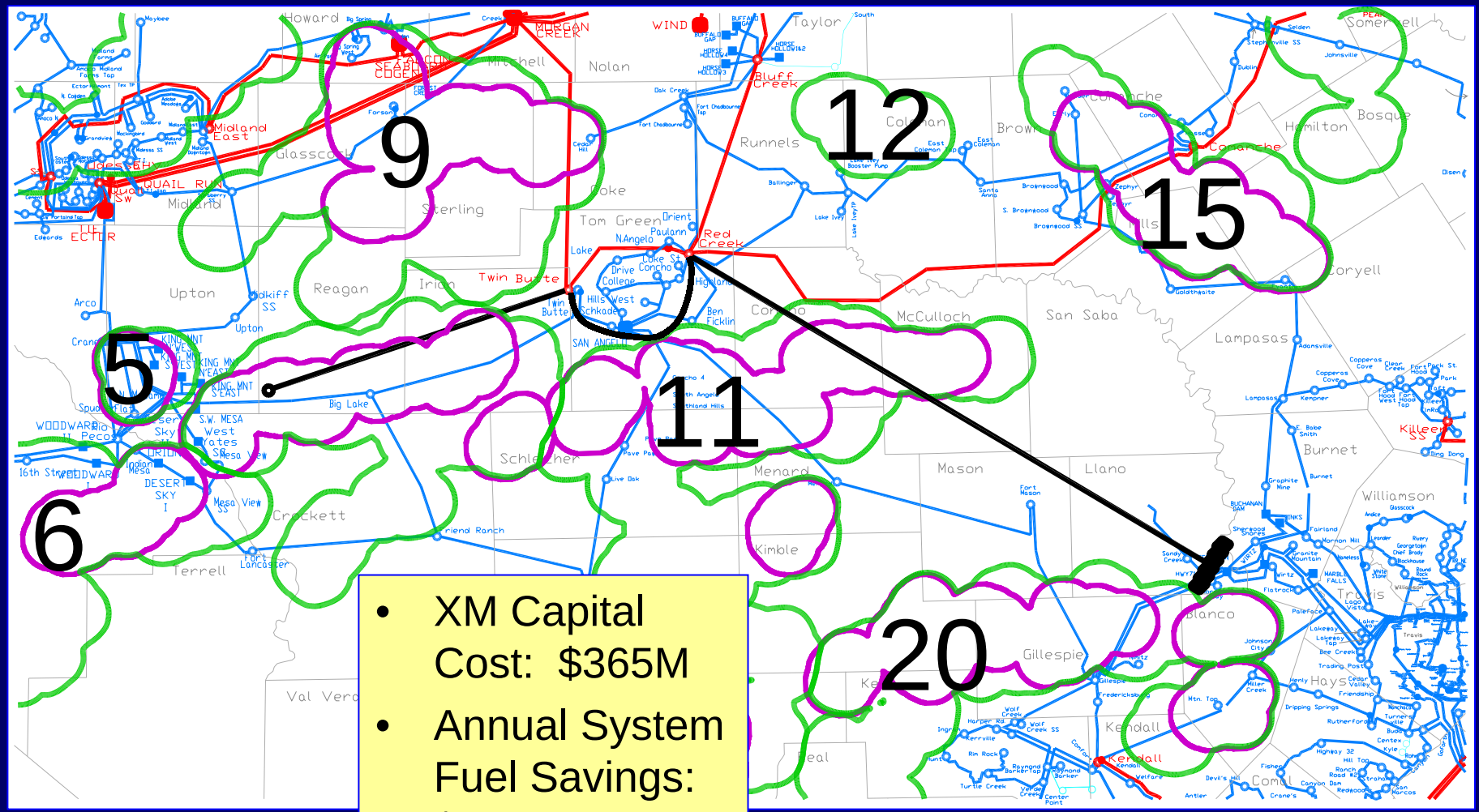
From the perspective of network upgrade needs, there are generally three sets of CREZs

1. Coastal (Area 24)
2. Mc Camey Area (Areas 5&6)
3. Abilene Area (Areas 9,10,12 &14)
4. Panhandle (Areas 2 & 4)



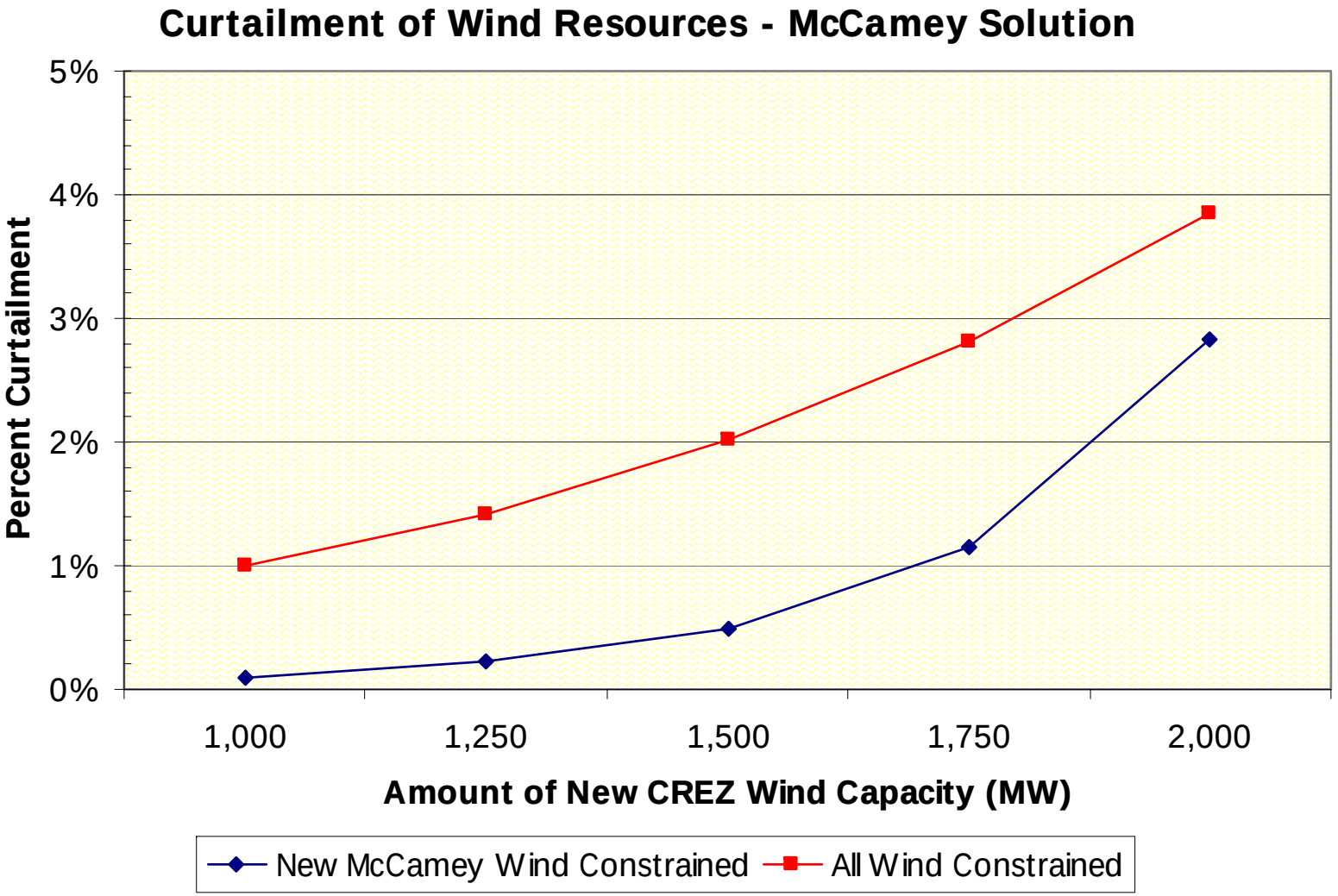
Will show options for McCamey Area as example

McCamey Area (CREZ 5 and 6): 1,500 MW Solution

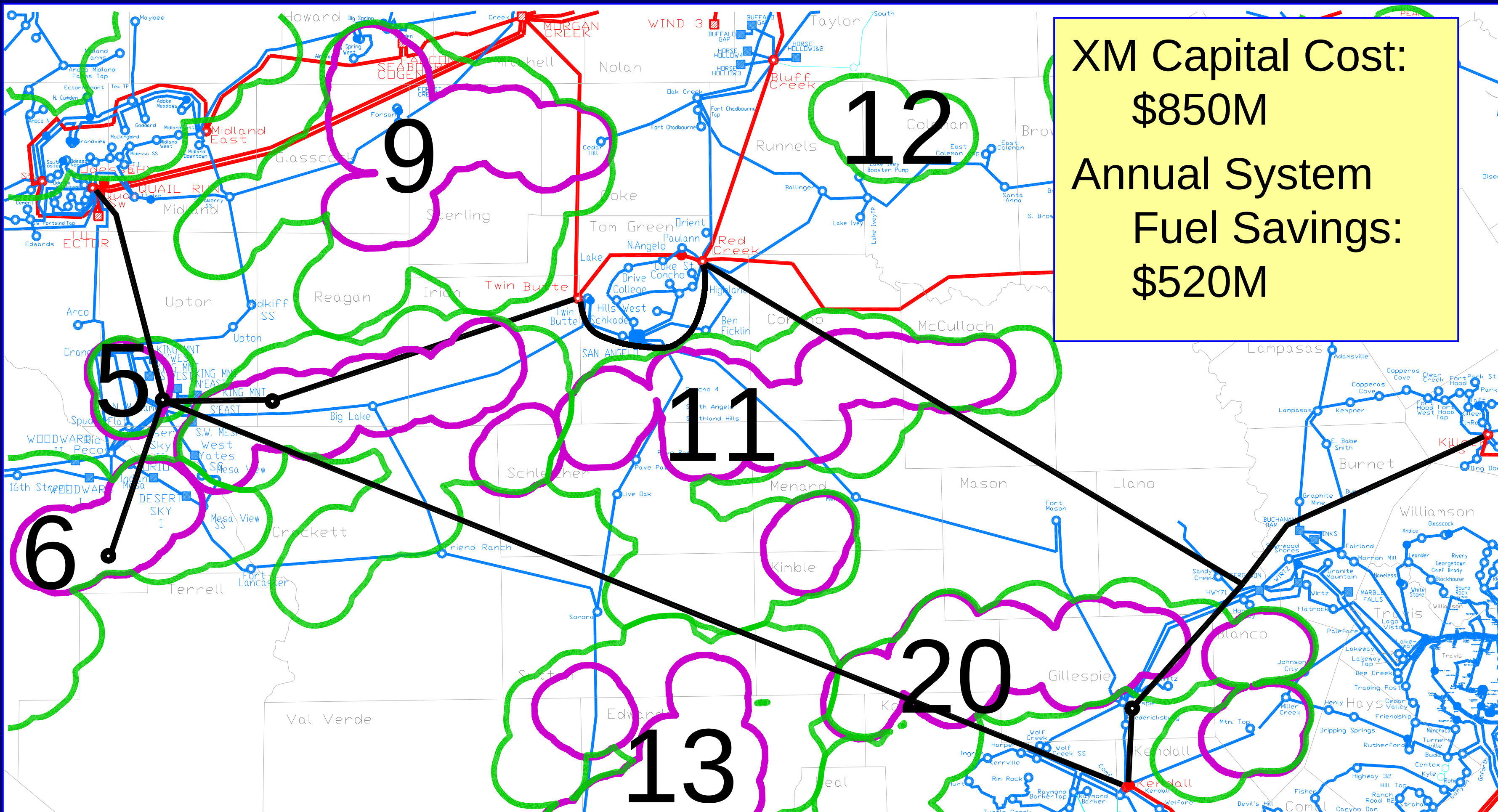


- XM Capital Cost: $365M
- Annual System Fuel Savings: $200M

Wind Curtailment Analysis



McCamey Area (CREZ 5 and 6): 4,000 MW Solution



XM Capital Cost: $850M

Annual System Fuel Savings: $520M

Next Steps

- Presentations from 10/30 RPG meeting available under RPG Combined Interest folder at http://oldercot.ercot.com/tmaps/login.cfm
- Comments received from stakeholders on 11/6
- Some additional analysis will be performed based on RPG comments and to evaluate other combinations
- Detailed report due to PUCT by 12/1

Long Term System Assessment (LTSA) Summary

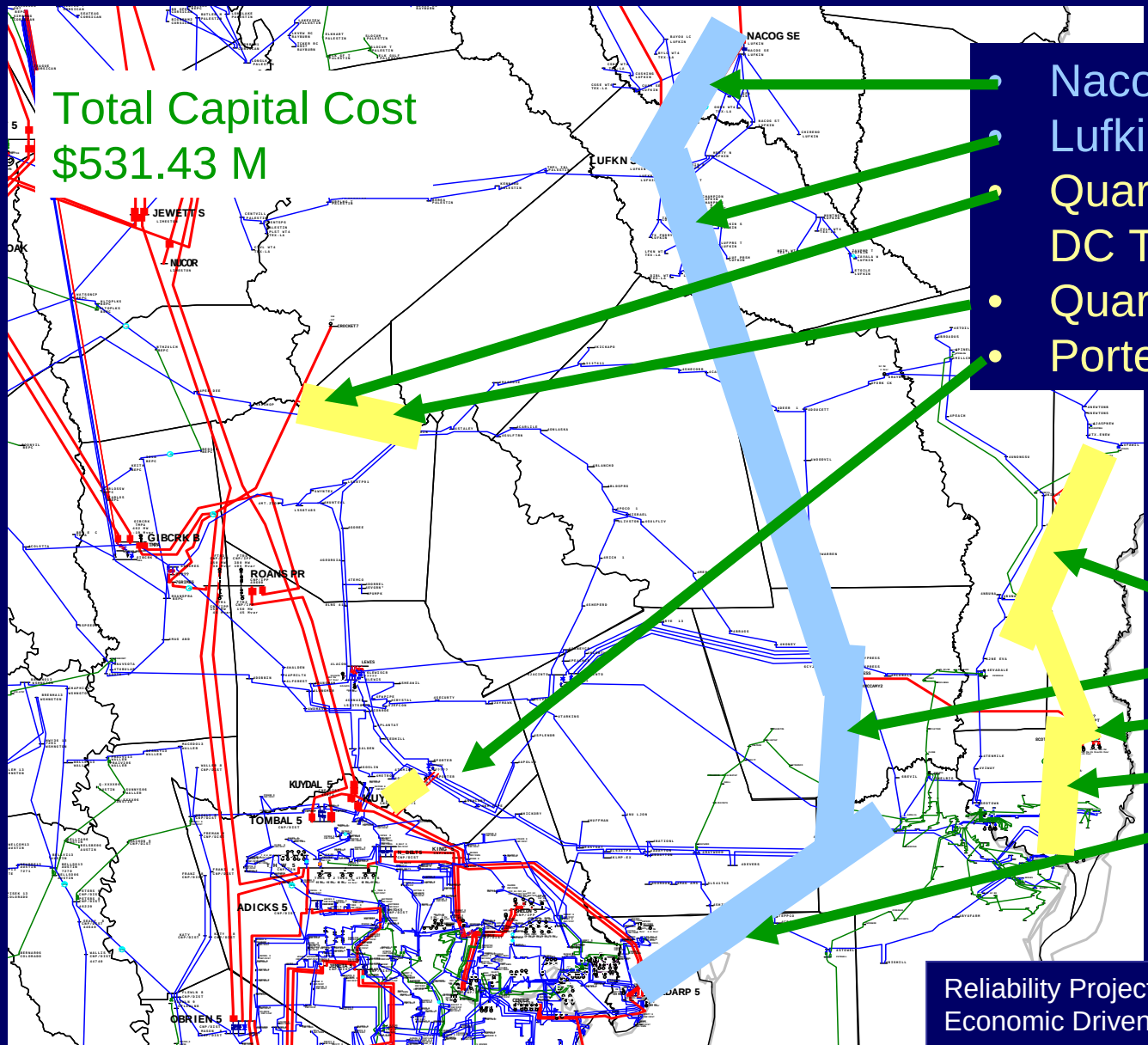
{To be added}

Entergy Integration Study Summary

Impetus for Study

- Entergy required to file transition to competition plan for Texas area with PUCT by 1/1/2007
- One option is to disconnect Entergy Texas area from Eastern Interconnect and join ERCOT
- ERCOT asked to study technical requirements to reliably and efficiently interconnect this area

Requirements Summary



- Nacogdoches-Lufkin
- Lufkin-Cypress
- Quarry Sub and 150MW DC Tie
- Quarry-Rivtrin &Rivtrin Sub
- Porter Sub and Loop

- Hartburg-Fawil
- Cypress-China
- Hartburg DC
- Hartburg-Sabine
- China-Cedar Bayou

Reliability Projects in Blue
Economic Driven Projects in Yellow

Capital Cost Breakdown

- $199 M - Reliability Driven Projects (potential to save $45M if use existing TXU/ETEC Etoile tie)
- $ 54 M - DC Ties to meet Co-op requirements (cost per MW may be 50% higher)
- $278 M - Economic-driven projects (results in $60M/yr production cost savings)
- $531 M - Total
- $ 81 M - If additional 600MW DC tie
- $612 M - Total

Next Steps

- Some additional studies being performed based on stakeholder feedback
- Dynamic studies by Powertech on-going
- Study Report will be posted when complete
- Entergy transition plan filing with PUCT by 1/1/2007