Comparison of Generation Plan Scenarios

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Austin Generation Resource Planning Task Force

- Diverse group of stakeholder representatives including environmental and business interests
- Reviewed generation scenarios for:
  - Costs, bill impacts, demand reduction through DSM, energy generation, and risks and uncertainties
- 13 generation scenarios evaluated and compared
- Scenario vote:
  - 5 for Staff Recommendation with proviso
  - 3 for Task Force Scenario #2 (Revised)
  - 1 for Task Force Scenario #1
- EUC and RMC Chairs believe 3 scenarios are valuable for comparison:
  - Strawman
  - Replace FPP
  - Staff Recommendation

Generation Scenario Comparison

Comparison of Four Scenarios: Strawman, New Staff Recommendation, Replace FPP and No Additional Generation

Description		Units	Strawman	New Staff Recommendation	Replace FPP	No Additional Generation
Capacity Additions (MW)	Early (09-12)	MW	525	590	390	390
	Middle (13-16)	MW	420	550	807	0
	Late (17-20)	MW	350	435	1,006	0
Replacements		MW	0	0	600 (Coal)	0
Levelized NPV of Portfolio Costs		2007 $/MWh	57.97	58.15	57.96	56.51
Real Increase from 2009 to 2020		%	29%	28%	31%	25%
Nominal Increase from 2009 to 2020		%	69%	69%	72%	64%
C02 Emissions 2020		Tonnes (000s)	5,238	4,580	2,086	7,034
2020 C02 Percent Reduction from 2005		%	-6%	-18%	-62%	27%
Renewable Percentage in 2020		%	30%	36%	54%	11%
Total Capital Expenditures		$MM	1,796	2,417	3,949	76

Task Force Scenario Comparison to Strawman and Staff Recommendation (Without Sales)

Description		Units	*Strawman*	*New Staff Recommen-dation*	*Task Force Scenario #1*	*Task Force Scenario #1 Solar as Off-System*	*Task Force Scenario #2 Revised*
Capacity Additions (MW)	**Early (09-12)**	MW	525	590	985	985	598
	Middle (13-16)	MW	420	550	830	830	557
	Late (17-20)	MW	350	435	940	940	586
Replacements		MW	0	0	600 (Coal)	600 (Coal)	0
Levelized NPV of Portfolio Costs		2007 $/MWh	57.97	58.15	62.59	64.15	60.08
Real Increase from 2009 to 2020		%	29%	28%	46%	59%	38%
Nominal Increase from 2009 to 2020		%	69%	69%	92%	108%	81%
CO2 Emissions 2020		Tonnes (000s)	5,238	4,580	2,170	2,170	4,803
2020 CO2 Percent Reduction from 2005		%	-6%	-18%	-61%	-61%	-14%
Renewable Percentage in 2020		%	30%	36%	52%	48%	30%
Total Capital Expenditures		$MM	1,796	2,417	3,301	3,301	1,725
Incremental Capacity Additions		Share					

Gas Wind Solar Bio DSM

*Solar as “off-system” refers to the condition where distributed solar is considered similar to DSM, excluding generation from total energy served

Task Force Scenario Comparison to Strawman and Staff Recommendation(With Sales)

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	Late (17-20)	MW	350	435	940	940	586
Replacements		MW	0	0	600 (Coal)	600 (Coal)	0
Levelized NPV of Portfolio Costs		2007 $/MWh	55.18	54.41	60.68	62.17	56.67
Real Increase from 2009 to 2020		%	20%	15%	39%	51%	24%
Nominal Increase from 2009 to 2020		%	58%	51%	83%	98%	63%
CO2 Emissions 2020		Tonnes (000s)	5,238	4,580	2,170	2,170	4,803
2020 CO2 Percent Reduction from 2005		%	-6%	-18%	-61%	-61%	-14%
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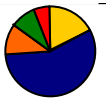
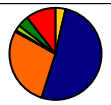
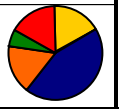
Incremental Capacity Additions		Share					

Gas Wind Solar Bio DSM

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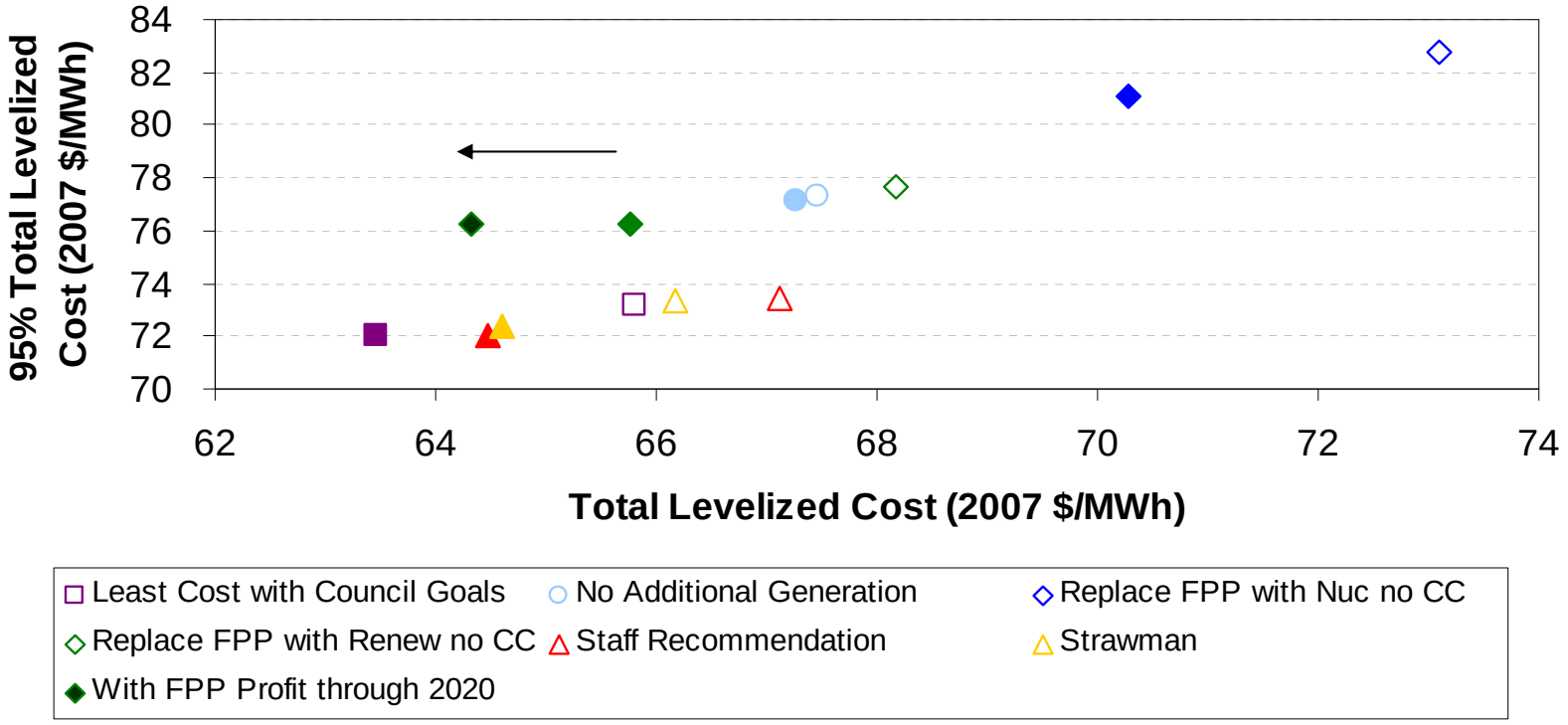
Apples to Apples
Comparisons of Capital and DSM Costs

Task Force Scenario #2	$2.76 billion
Staff Recommendation	$2.65 billion
Strawman	$1.8 billion

Risk Analysis

Impact of FPP Merchant Sales on Levelized Portfolio Costs

- If margins from coal sales were accrued through 2020, overall levelized portfolio costs could be on equal footing with Staff Recommendation
- If margins were to continue to be realized beyond 2020, costs *could be lowered further*



- Note that assessment is based on *one deterministic analysis*, and does not capture risks associated with coal plant dispatch, costs, and revenues

Why Not Lowest Bill Impact Meeting Council Goals?

- Keep the 200 MW combined cycle natural gas unit expansion at Sand Hill.
- Where will relatively cheap 50 MW of geothermal and 15 MW of landfill gas come from?
- Do you really want ALL solar build out (70 MW) occurring in the year 2020?
- No one in citizen task force picked this plan.

What Risk Do you Believe is Most Critical/What Policy Objectives do You Want to Achieve?

- Minimize new capital costs?

- Strawman: A
- Staff Recommendation: B
- Replace FPP: D

- Avoid Carbon emissions/avoid future carbon related costs?

- Replace FPP: A
- Staff Recommendation: B
- Strawman : C

- Avoid Market Swings from Natural Gas?

- Staff Recommendation: A
- Strawman: B
- Replace FPP: D

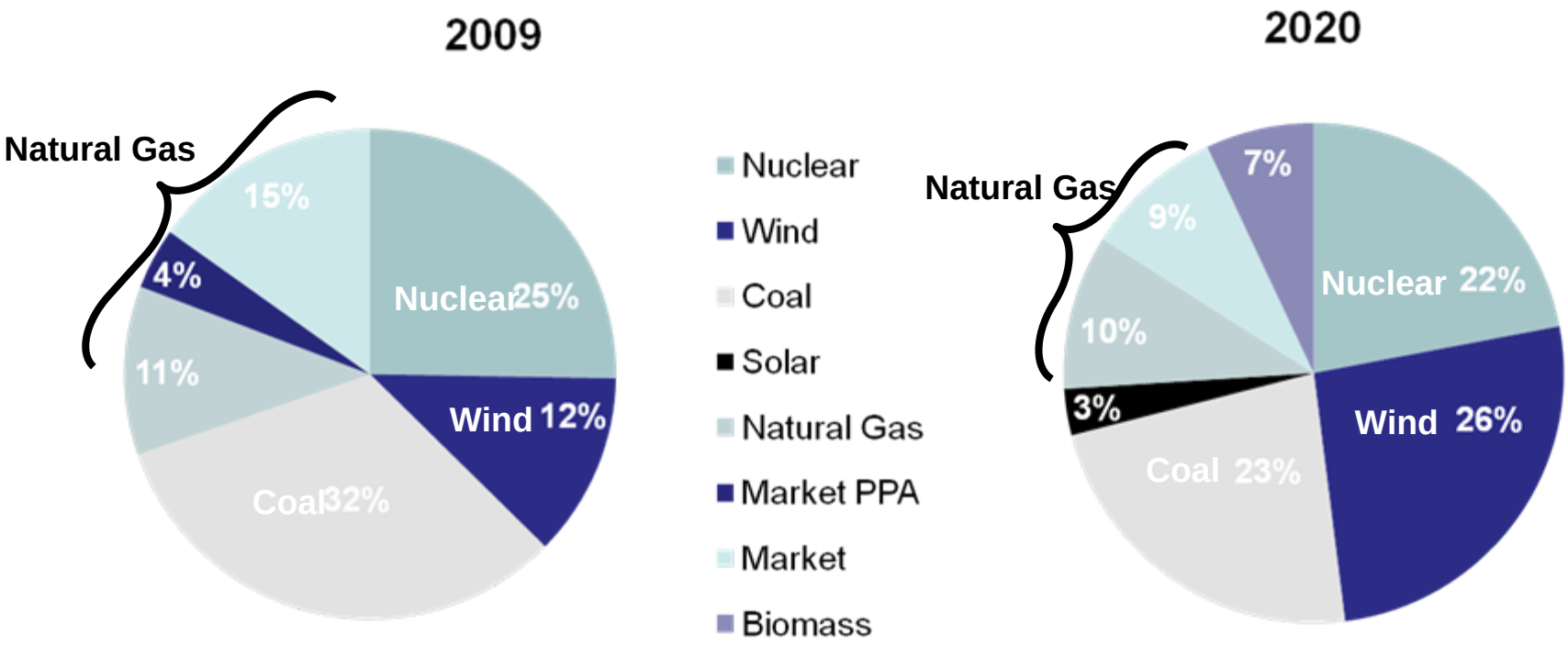
Avoid the unpredictable

- (spread risk of price spikes across broadest array of generation sources)
- (minimize risk that generation capacity will be unavailable or too costly to transmit)
- (minimize risk of “rush to the door” to get out of carbon)
- (minimize risk of too slow (expensive) DG adoption or DSM or too fast (prices plunge) DG adoption or DSM)

- Staff Recommendation: A
- Strawman: B
- Replace FPP: D

AE Recommendation

Energy Mix – 2009 vs. 2020



Austin Energy's Staff Recommendation

AE Recommendation

Generation Resources in MW

Year	Coal/Nuclear	Gas	Biomass	Wind	Solar	Renewable Portfolio
2009	1,029	1,444	12	439	1	12.6%
2010		100			30	12.5%
2011				(77)*/ 200		17.7%
2012			100			22.2%
2013				150		26.2%
2014					30	26.4%
2015		200		100		28.7%
2016			50		20	31.6%
2017				(126)*/ 200	30	35.0%
2018					20	33.6%
2019					30	33.7%
2020				115	40	36.7%
Total	**1,029**	**1,744**	**162**	**1001**	**201**	

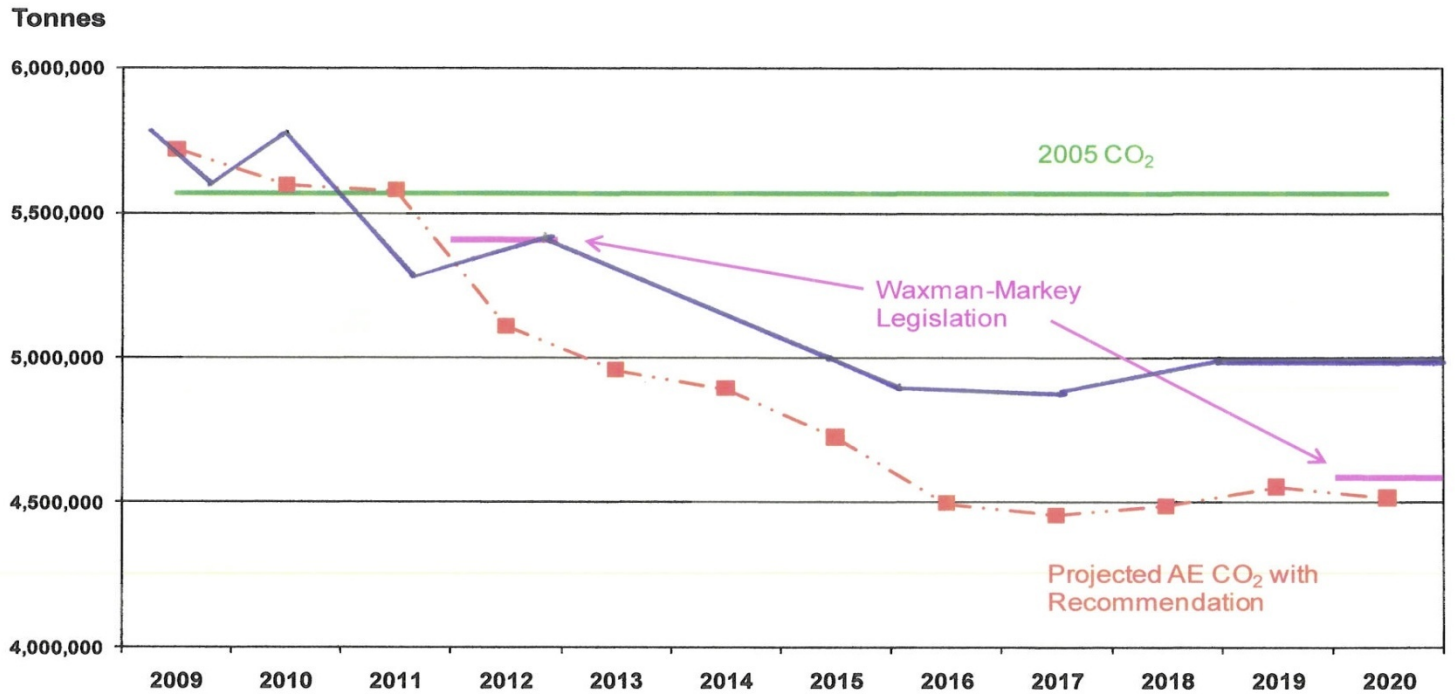
* Wind contracts expire.

What do we get for the extra $600 M in Capital Costs Between Strawman and Staff Recommendation?

- By 2020, $200 M in fuel savings and $50 M per year thereafter
- 100 MW more demand side management
- 150 MW more wind power
- 100 MW more solar
- Ability to sell up to 25% of energy potential of Fayette on open market
- More and sooner reductions in carbon emissions = 18 – 20% below 2005 levels by 2020 versus 6% reduction

AE Recommendation ***vs Strawman***

CO_2 Emissions



Blue = Strawman

Red = Staff Recommendation

November 14, 2009

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Recommendation to EUC

- Support AE's Staff Recommendation for the following reasons:
  - Balanced portfolio of generation resources
  - Relatively low risks and low costs
    - Carbon emissions
    - Fuel costs
  - Path to eliminating coal, w/o taking too dramatic of an approach
  - Reasonable assumptions

Unanimous Task Force Recommendations

1. Increase Conservation and Efficiency

- 1000 MW of DSM (up from 800 MW)
- Bolster ECAD if necessary
- Auction system and possibly increase cap on DSM projects (subject to equity)

2. Favor Carbon Free Generation over Carbon Based When Possible

- Adopt a goal of a “self sustaining market” for distributed renewable generation with 300 MW by 2020

- Prioritize DG Investments

  – Favor distributed generation projects with economic multiplier effects

  – Work with large employers

  – Look for partner funds to make DG more available in low income neighborhoods

3. Continually Reassess the Plan

- Every two years in public forum ask:
  - How do our generation costs compare against other public utilities and ERCOT wholesale price?
  - Do we need to move off carbon fuels quicker?
- Assess impact of generation plan on classes of consumers in upcoming rate case

4. Keep an eye on Natural Gas

- Do shale gas or other changes in the natural gas market allow us to place more reliance on cheap natural gas?

5. Keep an eye on Nuclear

- Are there purchase power agreements for nuclear that we can use as a carbon free energy source?

6. Reduce Bill Impact on those Least Able to Pay

- Develop new programs to make energy efficiency programs available to up to 200 % of Federal Poverty Level AND for residents between 200 – 400% of federal poverty level

- Focus on rental properties (ECAD energy hog provision)

- My most compelling reason to adopt a plan today

7. Ensure Maximum Transparency

- Decisions to buy more than 10 MW of generation should have two council readings (absent emergency)

- EUC to hold hearings and make recommendation within 6 months on ordinance defining confidential information

- Publish comparisons of rates in all classes annually

8. Assume Leadership in Climate Protection

- Use scenario as way to adopt CO2 cap
- Offset new carbon emissions from any new carbon source either by reducing other carbon emissions or DSM
- Consider propriety of earning revenue from “off system” sales of carbon emissions

9. Maintain Reliability

- Publish reports on specified indexes