



Austin Energy
Straw Man, No Additional Generation, Lowest
Bill Impact, and Replace FPP Scenarios

May 27, 2009

Agenda

- Scenario Introduction
 - Assumptions
 - Key Conclusions and Risks
- Analysis Findings
 - Draft Energy Resource Plan (“Strawman”)
 - No Additional Generation
 - Lowest Bill Impact
 - Replace FPP
 - Scenario Comparisons
- Conclusions and Tradeoffs
- Upcoming Scenarios

Scenario Summary

	Meets 30% Renewable Energy Goal	Meets 100 MW Solar Goal	Includes 700 MW DSM	Includes Existing Generation Units & Contracts	No Replacement of Existing Units before 2020	Meets AE Peak Demand and Energy Requirements	Allows any combination of supply and demand side options	Phased Replacement of FPP, 300 MW 2014, 300 MW 2020
Draft Energy Resource Plan "Strawman"	✓	✓	✓	✓	✓	✓		
No Additional Generation			✓	✓	✓	✓		
Lowest Bill Impact			✓	✓	✓	✓	✓	
Lowest Bill Impact Meeting Council Goals	✓	✓	✓	✓	✓	✓	✓	
Replace FPP: Renewables	✓	✓	✓	✓		✓		✓
Replace FPP: Low Cost, Low Carbon			✓	✓		✓	✓	✓

All Assumptions Consistent across Scenario Analyses

- Simulation of Austin Energy service territory and wider ERCOT market area performed with hourly dispatch analysis tools
- All key market drivers consistent across scenarios:
 - Natural gas prices
 - Power market prices
 - CO2 compliance costs
 - Coal prices
 - Capital costs and operational parameters for new units
 - DSM costs
 - Electricity load forecast for both AE and ERCOT
- Assumed 2.5% inflation rate for all conversions to nominal dollars

Overall Conclusions

- *Strawman* expected to increase costs by 29% in real terms from 2009 to 2020, reduce emissions by 11% below 2007 levels by 2014, and achieve 30% RPS by 2020
- The *No Additional Generation* Scenario is expected to increase costs by about 25%, reduce emissions by 4% below 2007 levels by 2014, and achieve 11% RPS by 2020
- *Lowest Bill Impact* Scenario is expected to increase costs by 20%, (about 10% lower than the cost impacts from the *Strawman*) by 2020, reduce emissions 7% below 2007 levels by 2014, and achieve 34% RPS by 2020
 - Delays significant new generation until after 2015 (No combined cycle)
 - Meets all Council Goals except 100 MW of solar additions
 - Adding 70 MWs of Solar in 2020 adds little to costs.
 - Adds about 100 MW of additional DSM
- *Replace FPP* Scenario expected to increase costs by about 31% by 2020, reduce emissions 35% below 2007 levels by 2014, and achieve 54% RPS by 2020
 - Significant early cost increase above all other scenarios in 2014 when initial coal replacement occurs
- Key Tradeoffs:
 - How quickly to reduce carbon emissions and increase renewable share, given the cost impacts of early capacity additions
 - Which risks to mitigate (CO2 prices, capital costs, fuel and power prices)
 - How much are you willing to pay in order to reduce CO2 emissions and increase renewable generation

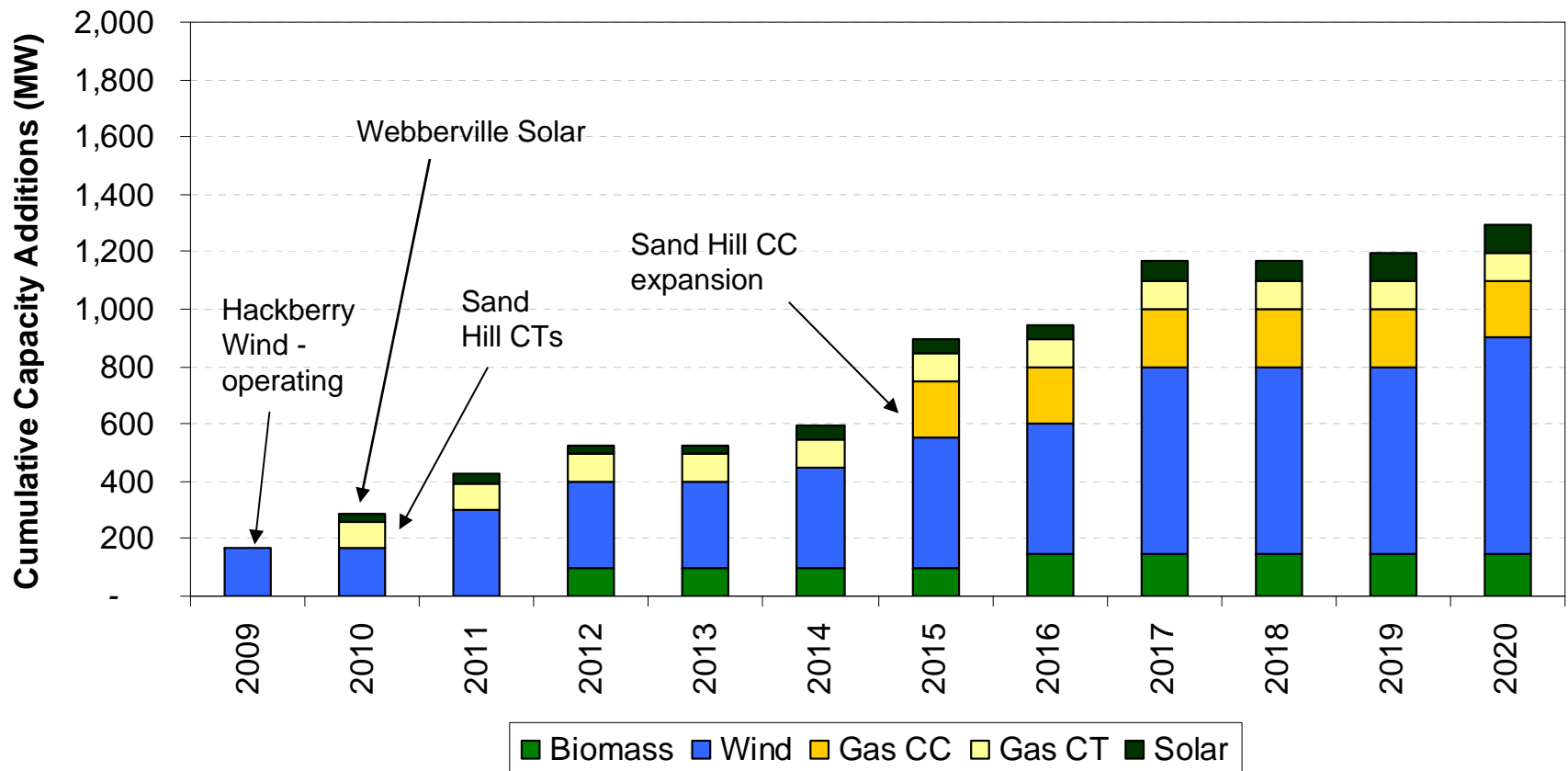
Market Risks

- CO2 Costs and Regulations
 - Significant uncertainties exist for cost of CO2 allowances and timing and stringency of regulations
- Fuel Prices
 - Natural gas prices are highly volatile and expected prices heavily impact power market prices, plant dispatch, and renewable expansion economics
- Electricity Demand
 - Load forecast impacts required capacity additions (timing and type) for Austin as well as wider market price projections
- Power Market Prices
 - Power market prices highly dependent on fuel prices and supply-demand balance in wider market area
- Capital Cost Uncertainty
 - Materials costs and capital costs have been volatile in recent years
 - Solar PV costs are expected to decline significantly, but if such a decline is not realized, portfolios could face different costs
- Resource Availability
 - Many scenarios are heavily dependent on significant renewable capacity additions, which may not be available to AE in full or at the assumed price
 - Transmission risk for significant wind expansion also exists. This could either limit wind procurement or raise the costs, due to transmission charges.

Strawman Findings

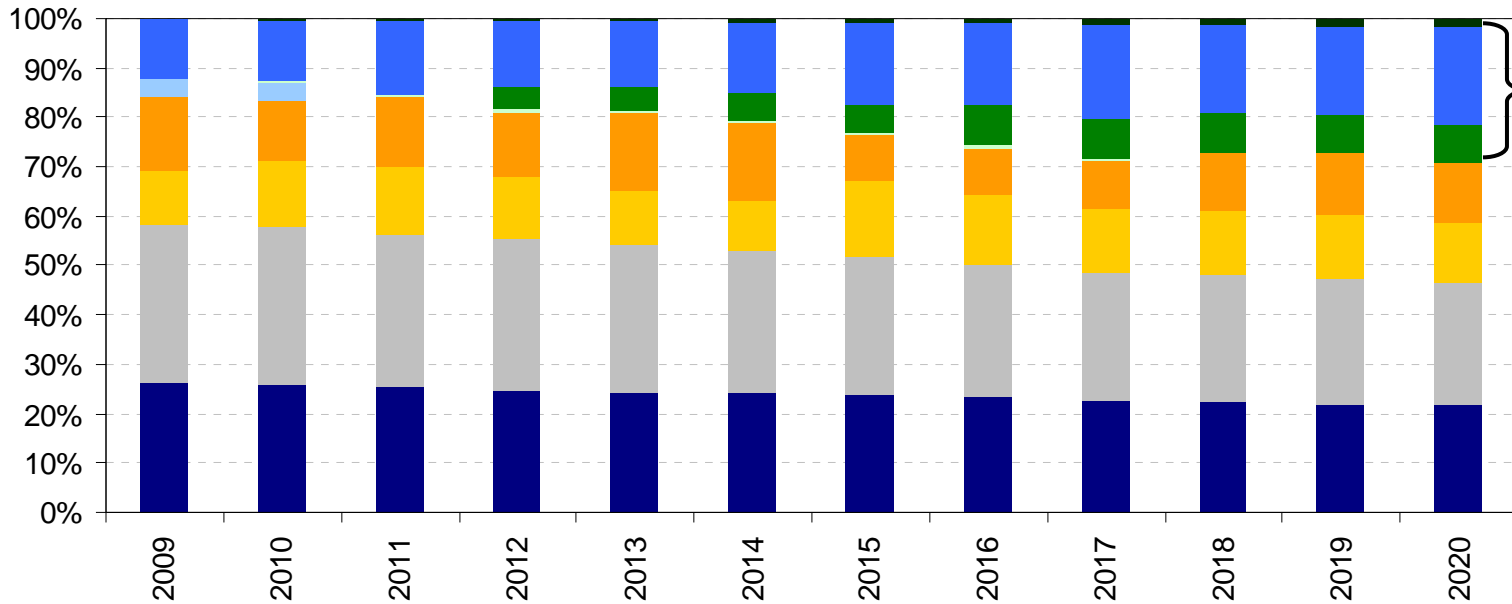
Strawman Annual Capacity Expansion Plan

- Base expansion plan (2009-2020) includes 300 MW Natural Gas, 750 MW wind, 100 MW solar, 150 MW biomass



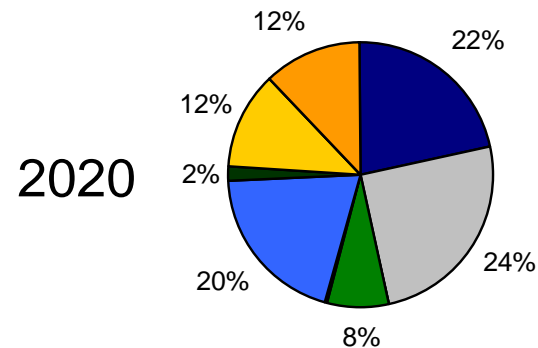
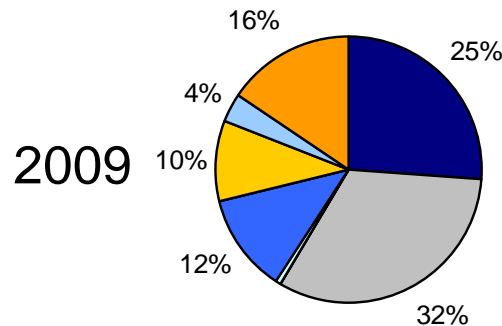
Strawman Annual Generation for Native Load

Energy Shares



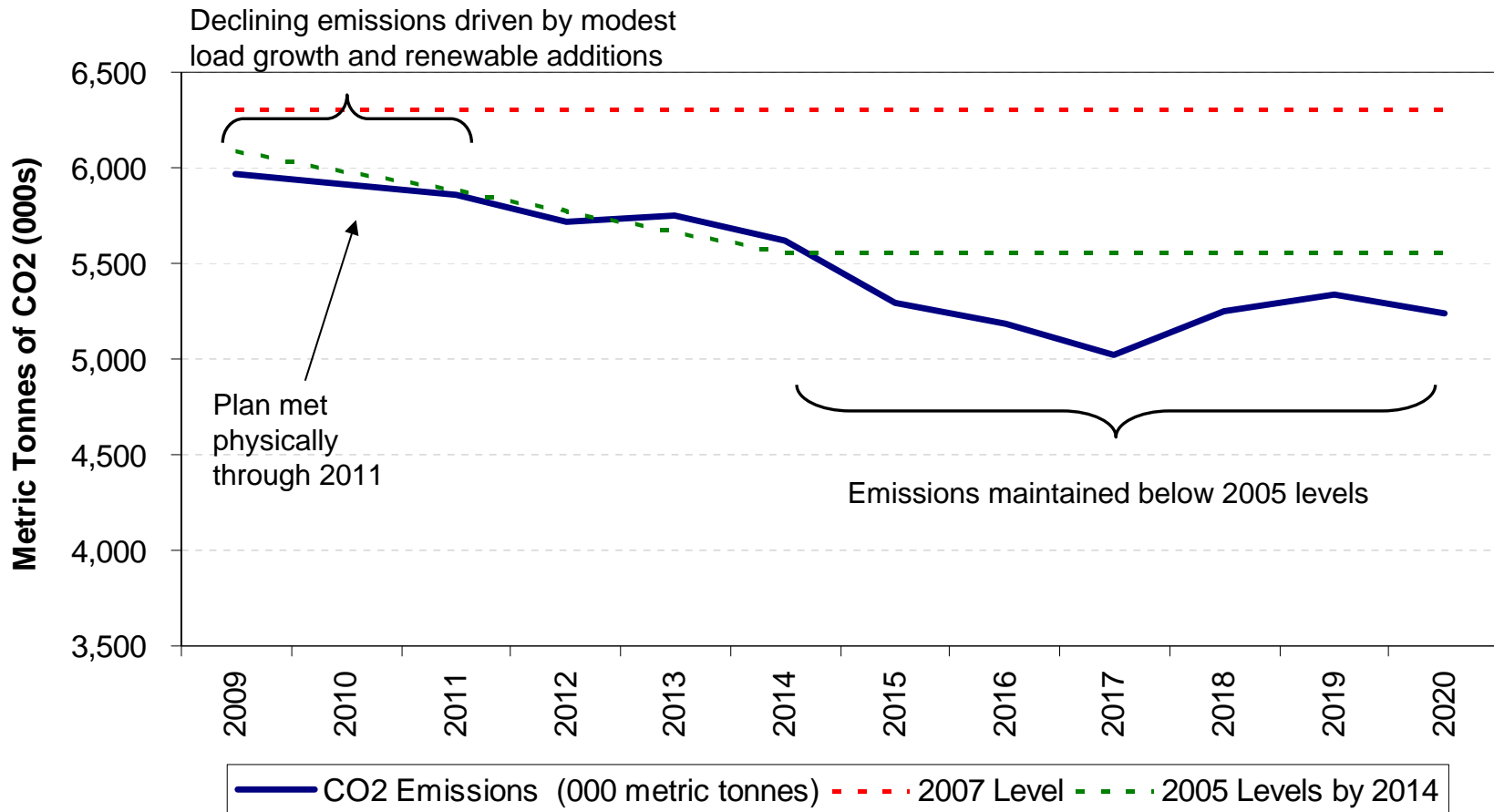
- Growing Renewable Share
- 30% by 2020
- Target nearly hit by 2017 in current *Strawman*

■ Nuclear
 ■ Coal
 ■ Gas
 ■ Market
 ■ Market PPA
 ■ Landfill Gas
 ■ Geothermal
 ■ Biomass
 ■ Wind
 ■ Solar



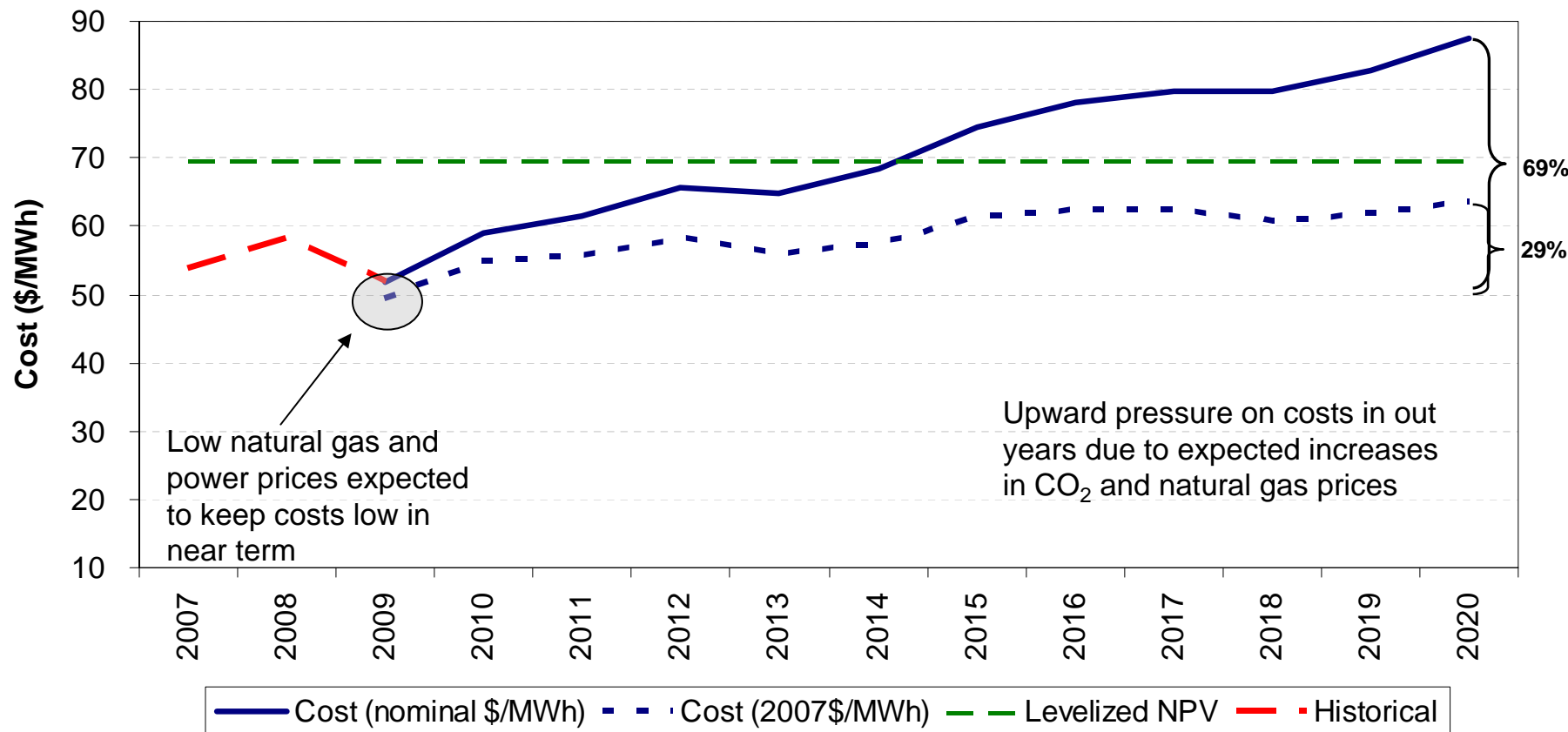
Strawman CO₂ Emissions

- CO₂ Emissions expected to decline over time steadily and stay below the 2005 levels beyond 2015

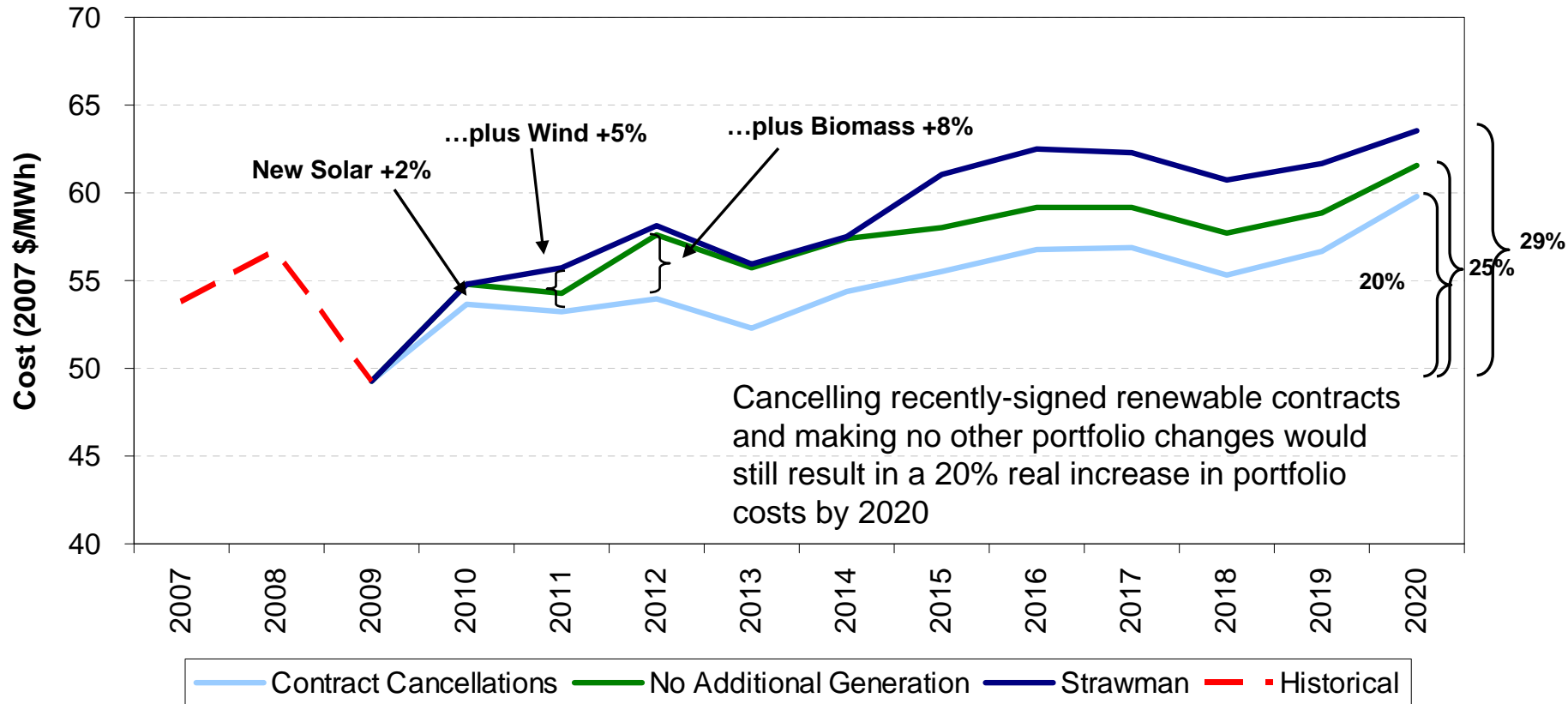


Strawman Portfolio Costs

- Levelized portfolio costs from 2009-2020 expected to be about \$58/MWh (real terms) or \$70/MWh (nominal terms)
- Overall portfolio costs are expected to be about 29% higher real terms or 69% higher in nominal terms in 2020 than costs in 2009

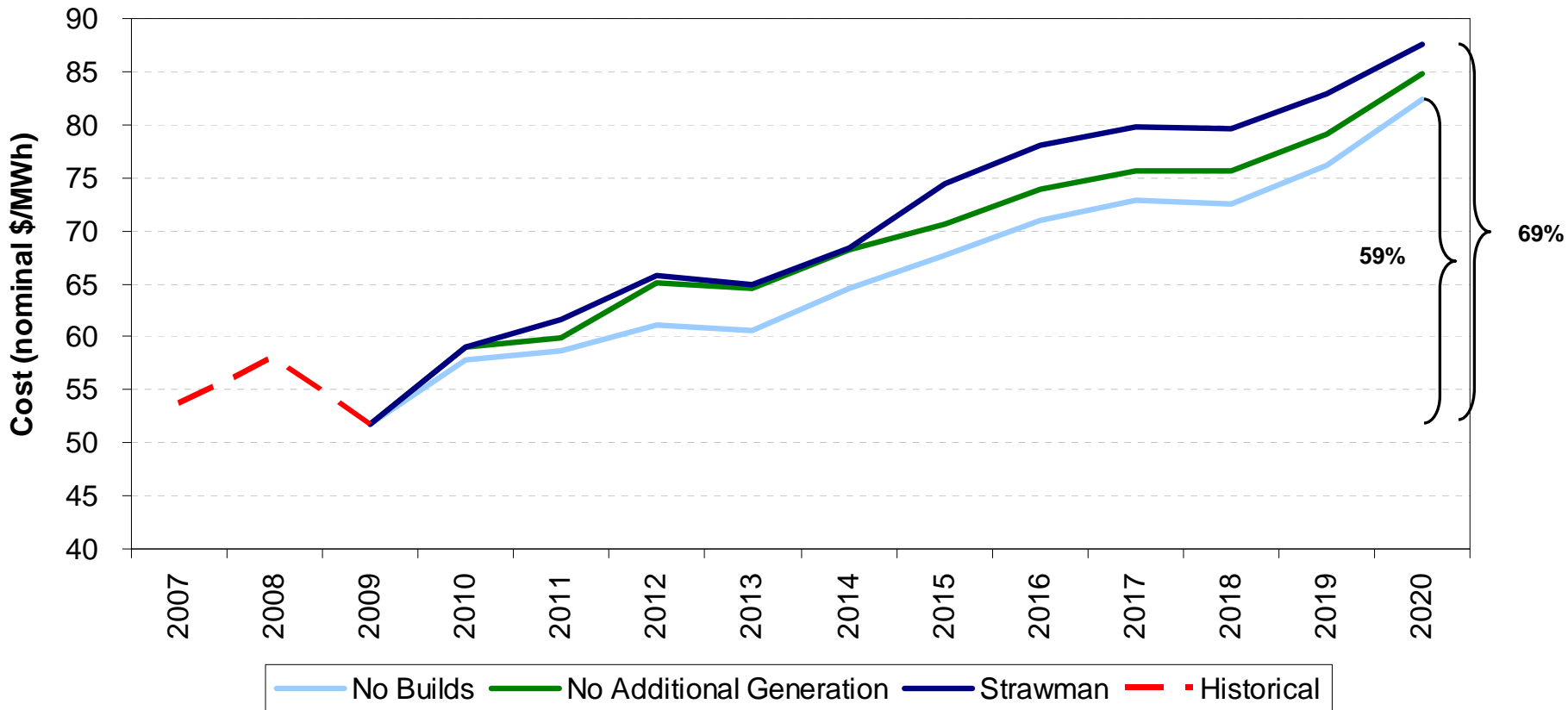


New Renewable Projects in *Strawman* Increase Costs



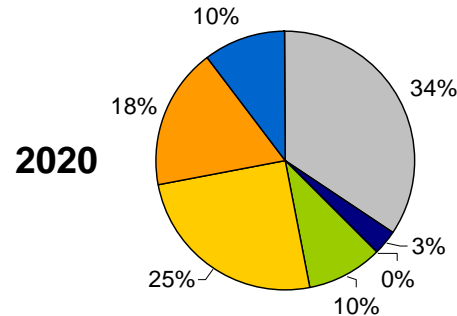
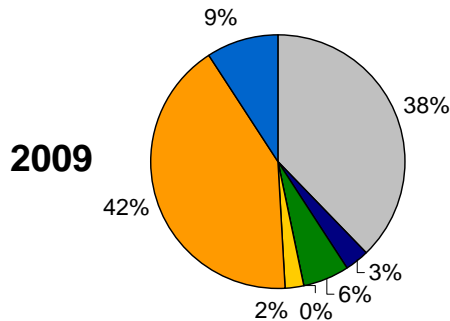
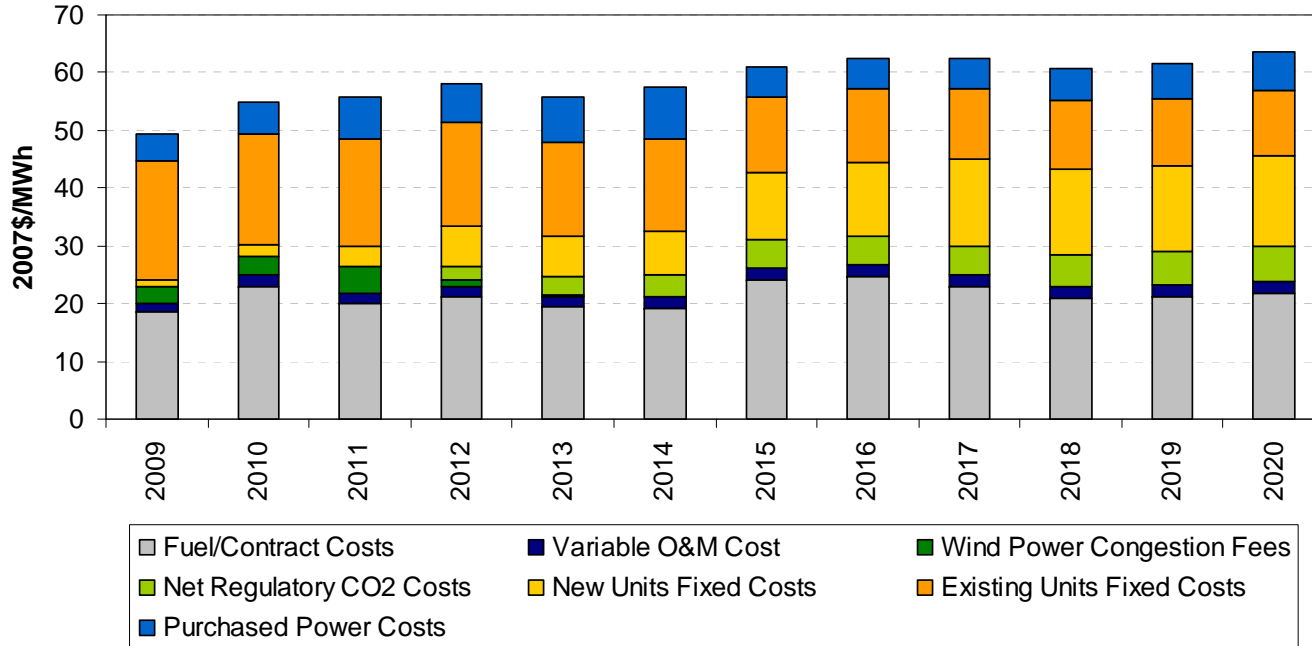
Strawman Cost Impacts (Nominal Dollars)

- In nominal terms, Strawman increases expected costs from 2009 to 2020 by about 69%, while scenario with no additional resource additions would still result in a 59% cost increase



Cost Components for *Strawman*

- Total costs trending upward through 2020, driven by new capacity additions, higher gas prices, and increasing CO2 costs
 - Over time, these components make up a larger share of the total



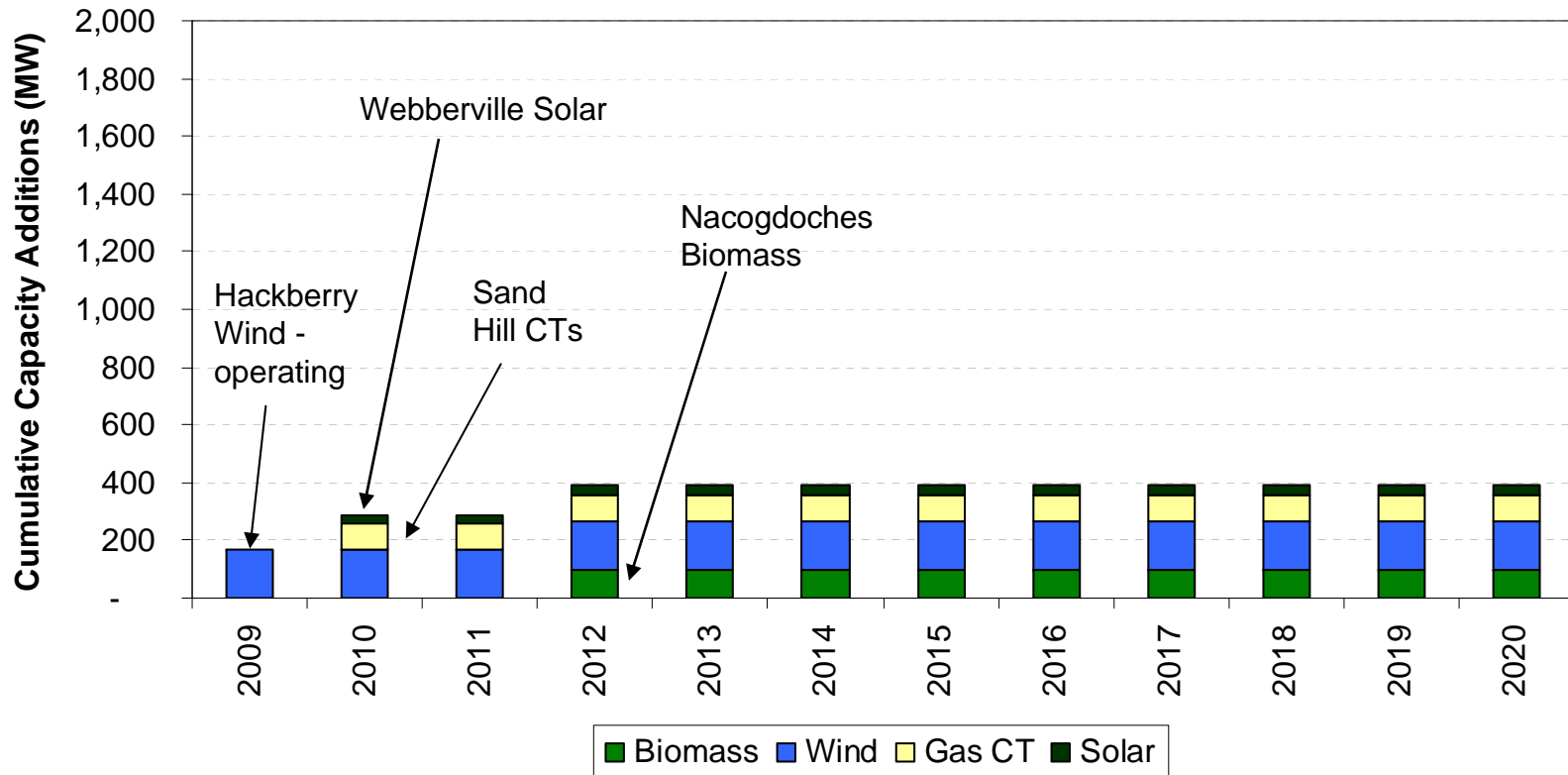
2009 *Strawman* Findings

- Expansion plan results in a significant increase in renewable generation and less reliance on market purchases
 - Council goal of 30% RPS by 2020 is met
 - While still a significant part of total portfolio, coal and nuclear generation expected to comprise a declining share of total
- CO₂ emission reductions significant and meet reduction targets (below 2005 by 2014)
 - At 2005 levels by 2014, and emissions expected to be below 2005 levels in 2015 and beyond
- Portfolio costs are expected to rise by around 29% in real dollars (69% in nominal dollars) between 2009 and 2020, with levelized costs from 2009 to 2020 expected to be about \$58/MWh in real dollars (or \$70/MWh in nominal terms)
 - However, costs expected to increase by 20% real with no additions after today and 25% with PPAs already signed, so net increase is only 4% (real).
- Reserve margins are expected to increase to around 13% to 14% with the addition of renewable resources required to meet the RPS and emission reduction goals
- Capital requirements high in select years due to lumpy capacity additions

No Additional Generation

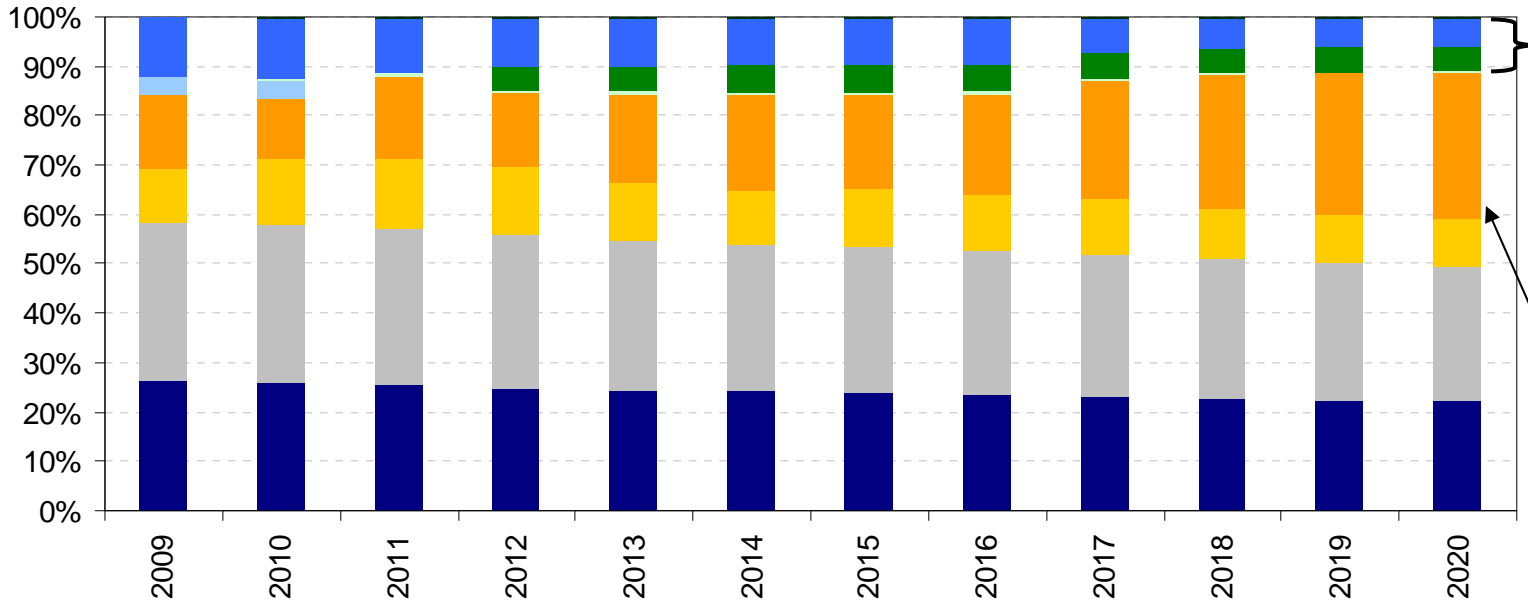
No Additional Generation Annual Capacity Expansion Plan

- All capacity expansion is represented by 4 firm project developments
 - Hackberry Wind (165 MW) – Operating
 - Sand Hill Natural Gas CT (100 MW)
 - Webberville Solar (30 MW)
 - Nacogdoches Biomass (100 MW)



No Additional Generation Annual Generation for Native Load

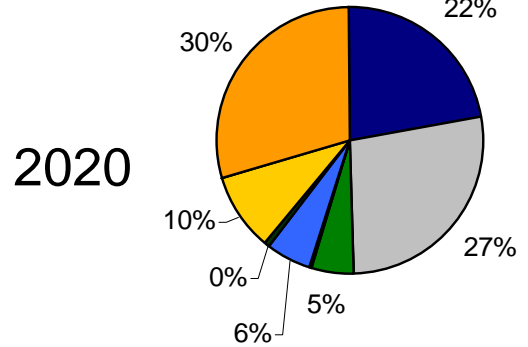
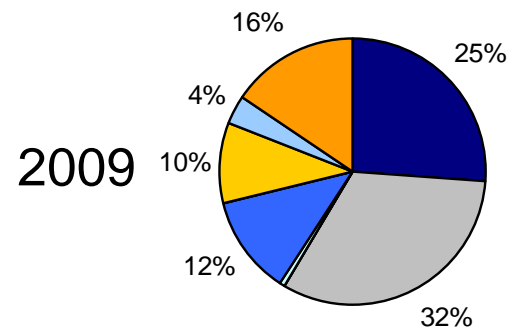
Energy Shares



- Renewable share down to 11% by 2020
- Sweetwater wind and Tessman Road LFG contracts expire in 2017

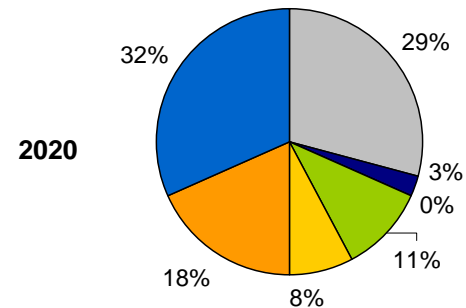
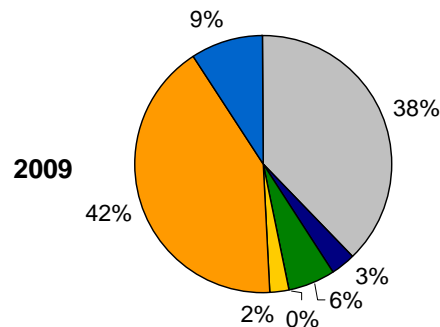
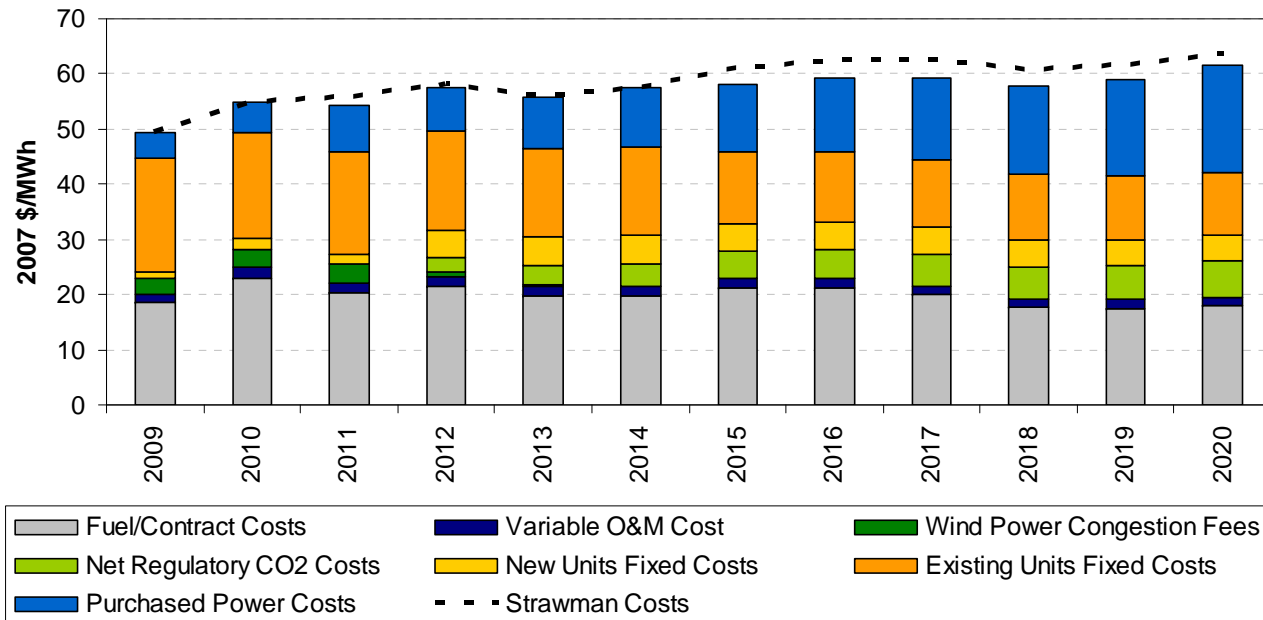
Significantly growing share from market purchases

■ Nuclear ■ Coal ■ Gas ■ Market ■ Market PPA ■ Landfill Gas ■ Geothermal ■ Biomass ■ Wind ■ Solar



No Additional Generation Total Portfolio Costs

- Lower than the Strawman due to limited fixed cost additions
- Purchased power costs, however, become a very significant and growing share of the portfolio, with high risk to market exposure

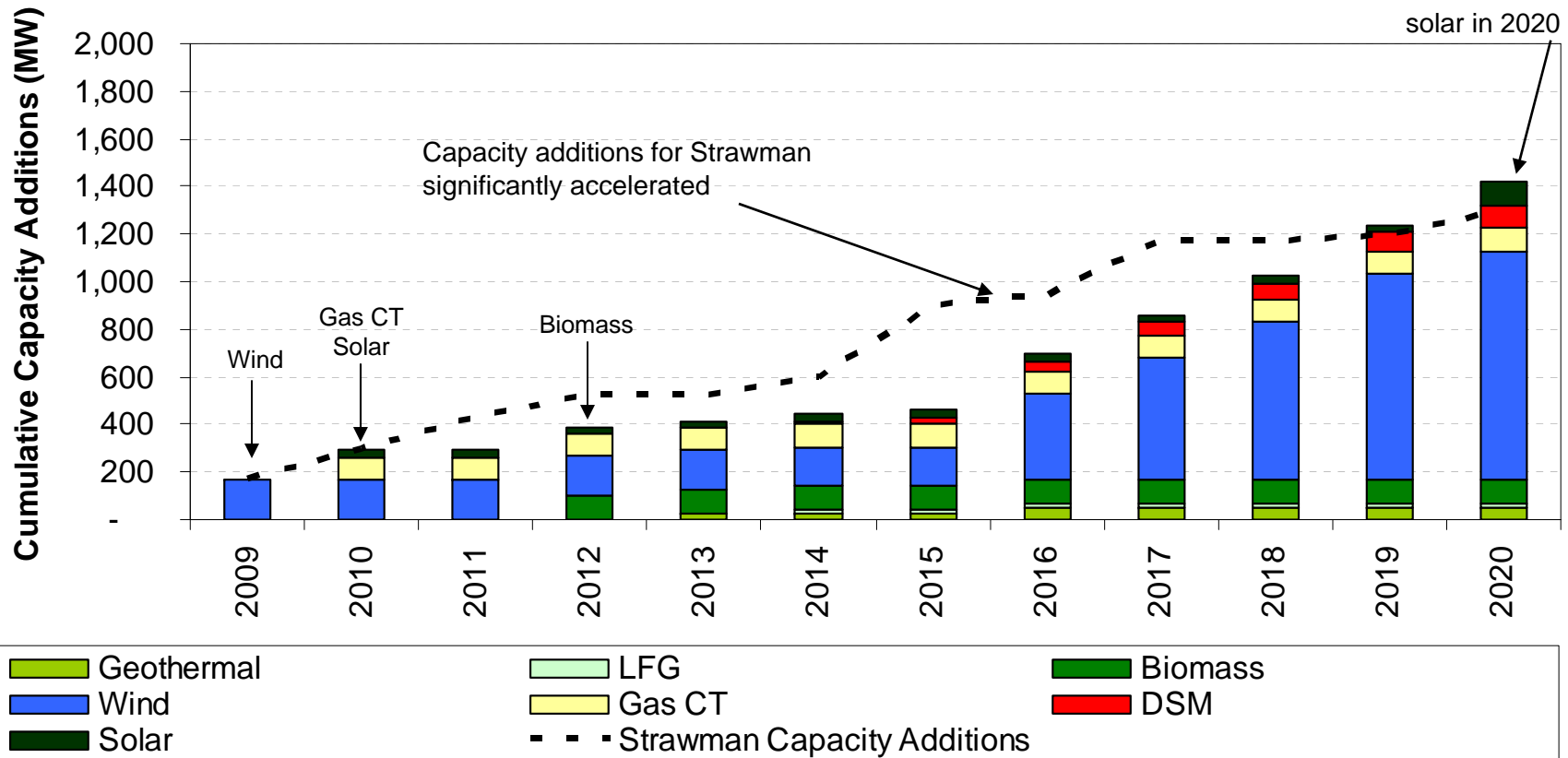


***Lowest Bill Impact and
Lowest Bill Impact Meeting
Council Goals***

Lowest Bill Impact and Lowest Bill Impact Meeting Council Goals Annual Capacity Expansion Plan

- Expansion plan (2009-2020) includes 100 MW Natural Gas, 965 MW wind, 100 MW solar, 100 MW biomass, 50 MW Geothermal, 15 MW LFG, and 98 MW DSM
 - New capacity additions are generally delayed until after 2015 when renewable projects hedge against rising natural gas and carbon prices
 - Near term needs are met through market purchases or through a market PPA
- Only difference with Lowest Bill Impact portfolio is an extra 70 MW of additional solar in 2020

Only difference when meeting Council Goals is 70 MW solar in 2020

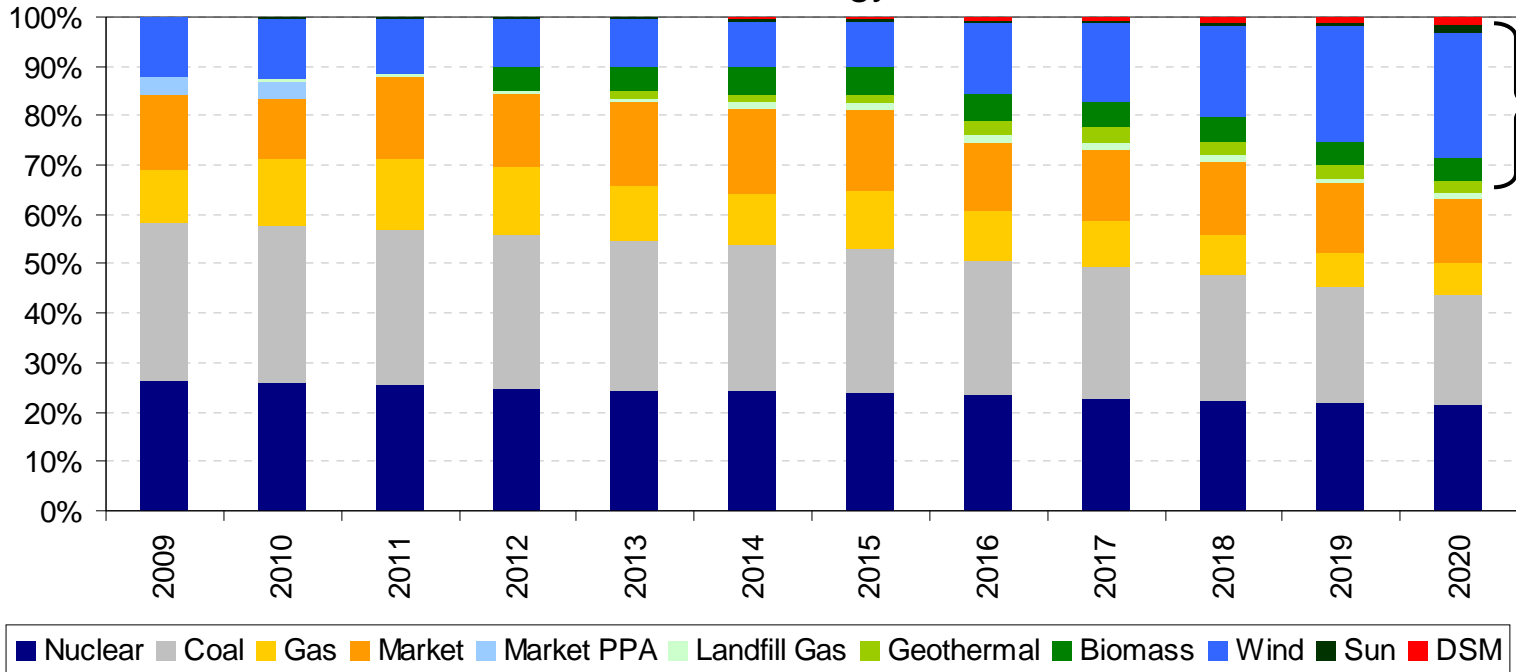


Lowest Bill Impact Portfolio Nearly Meets Council Goals

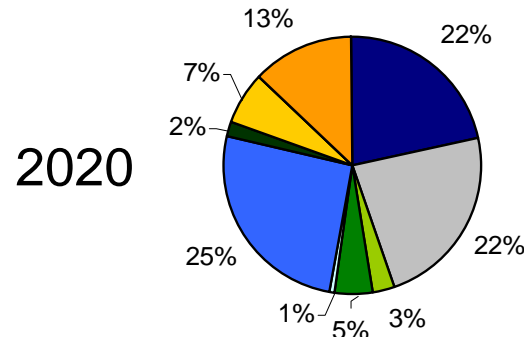
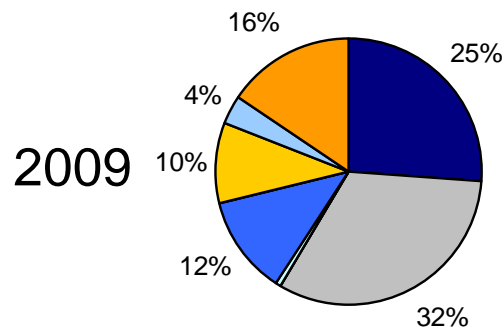
- Renewable options are most cost-effective additions after 2015 in order to hedge against increases expected in natural gas prices, carbon compliance costs, and power market prices
- Most cost-effective expansion plan results in 30% RPS achievement by 2019
- Solar goal not met in lowest bill impact case
 - Additions not fully cost-effective until 2023 when costs are expected to decline
 - However, 70MW of additional solar capacity in 2020 does not significantly impact overall portfolio costs

Lowest Bill Impact Meeting Council Goals Annual Generation for Native Load

Energy Shares

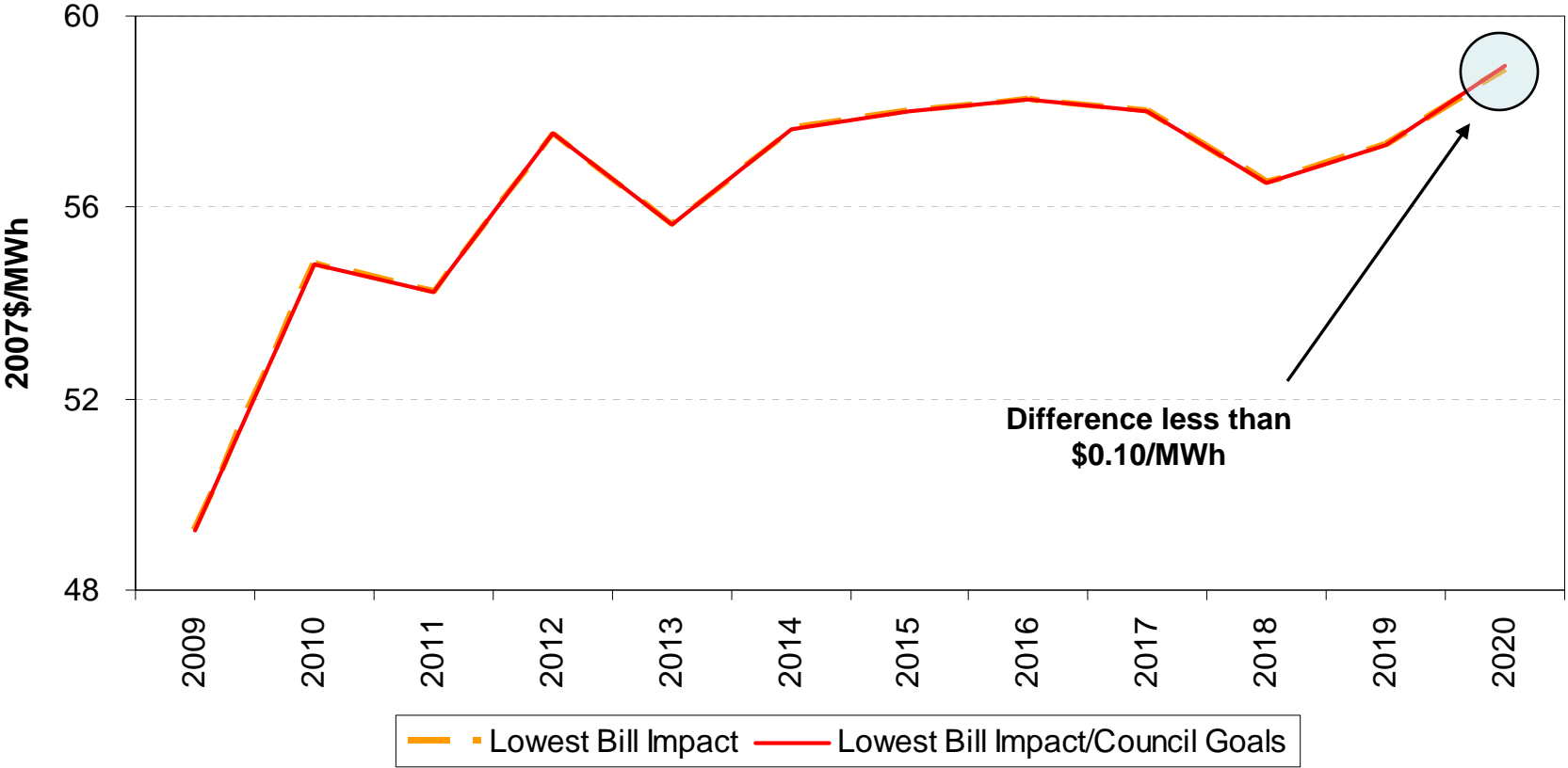


Renewable share above 30% by 2019



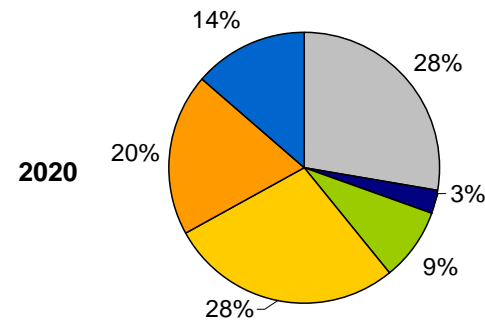
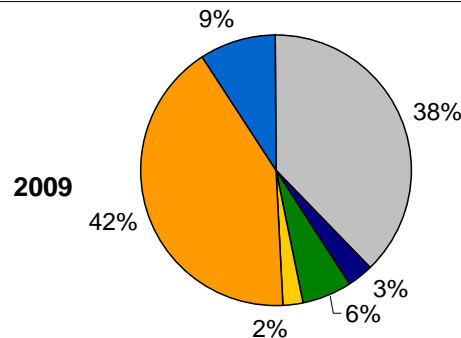
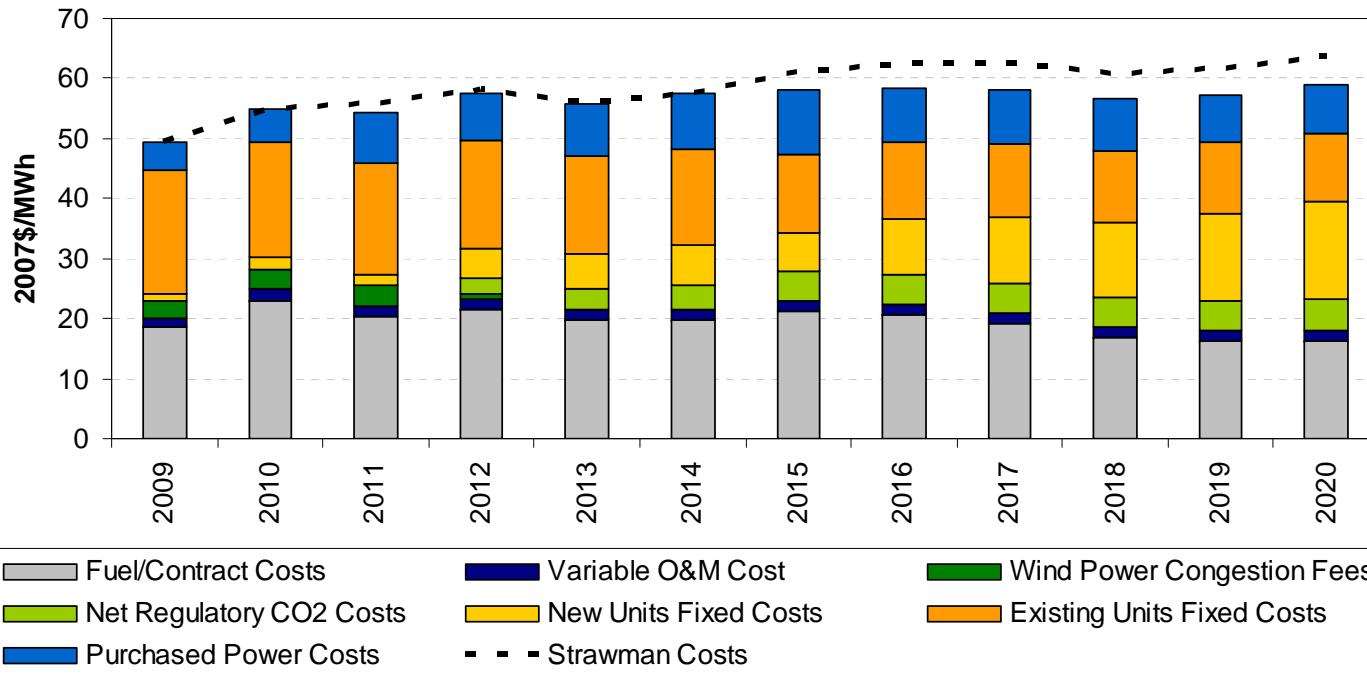
Incremental Solar Costs Only Difference in Cost

- 70 MW of additional solar capacity in 2020 increases portfolio costs by an insignificant amount



Lowest Bill Impact Meeting Council Goals Portfolio Costs

- Lower than the Strawman due to lower fuel costs associated with natural gas-fired generation, delayed capital expenditures, and lower regulatory CO2 costs



Scenario Comparison Summary

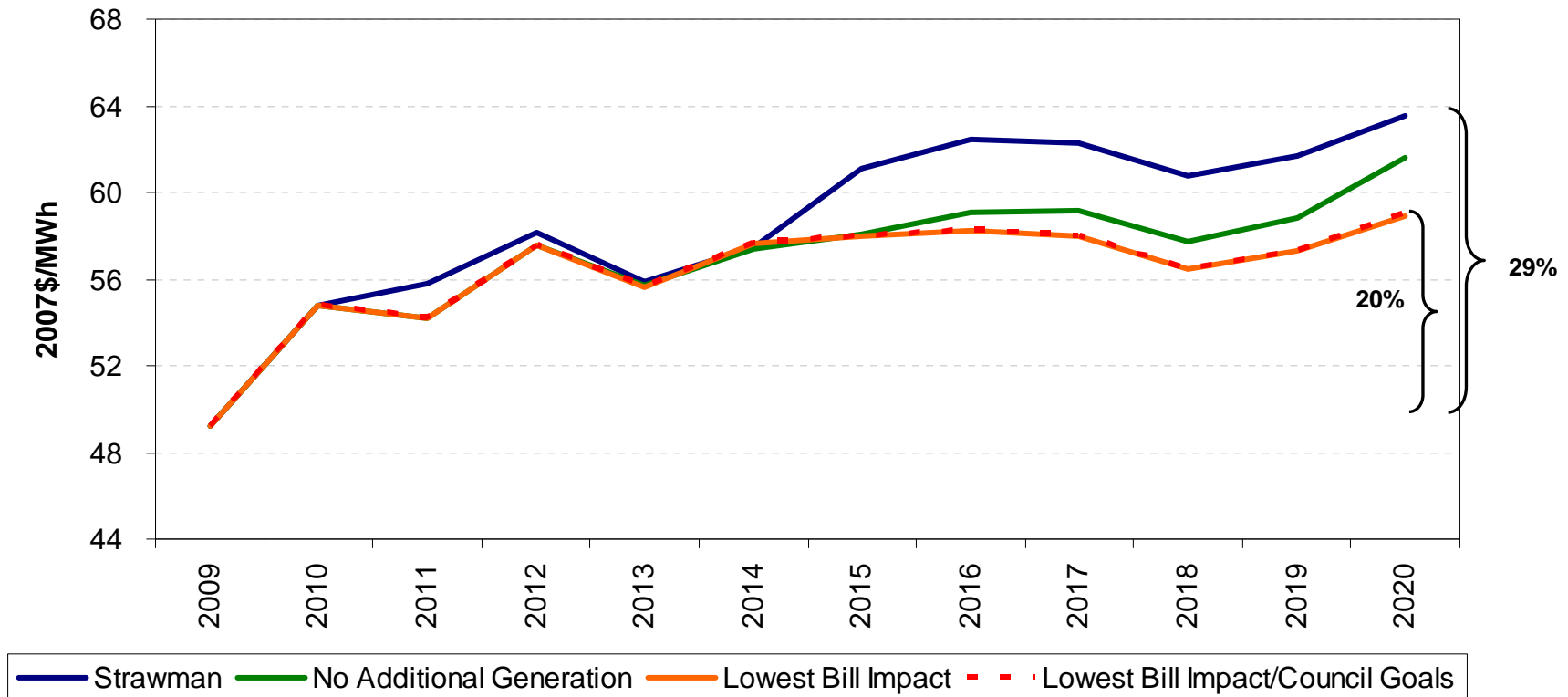
Scenario Summary

Description		Units	Strawman	No Additional Generation	Lowest Bill Impact	Lowest Bill Impact Meeting Council Goals
Capacity Additions (MW)	Early (09-12)	MW	525	390	390	390
	Middle (13-16)	MW	420	0	307	307
	Late (17-20)	MW	350	0	656	726
Replacements		MW	0	0	0	0
Levelized NPV of Portfolio Costs		2007 \$/MWh	57.97	56.51	56.01	56.01
Real Increase from 2009 to 2020		%	29%	25%	20%	20%
Nominal Increase from 2009 to 2020		%	69%	64%	57%	57%
CO2 Emissions 2014 (Target 5,557)		Tonnes (000s)	5,618	6,066	5,848	5,848
2014 CO2 Percent Reduction from 2007		%	11%	4%	7%	7%
Renewable Percentage in 2020		%	30%	11%	34%	35%
Total Capital Expenditures		\$MM	1,796	76	2,012	2,175
Incremental Capacity Additions		Share				

- Gas
- Wind
- Solar
- LFG
- Geo
- Bio
- DSM

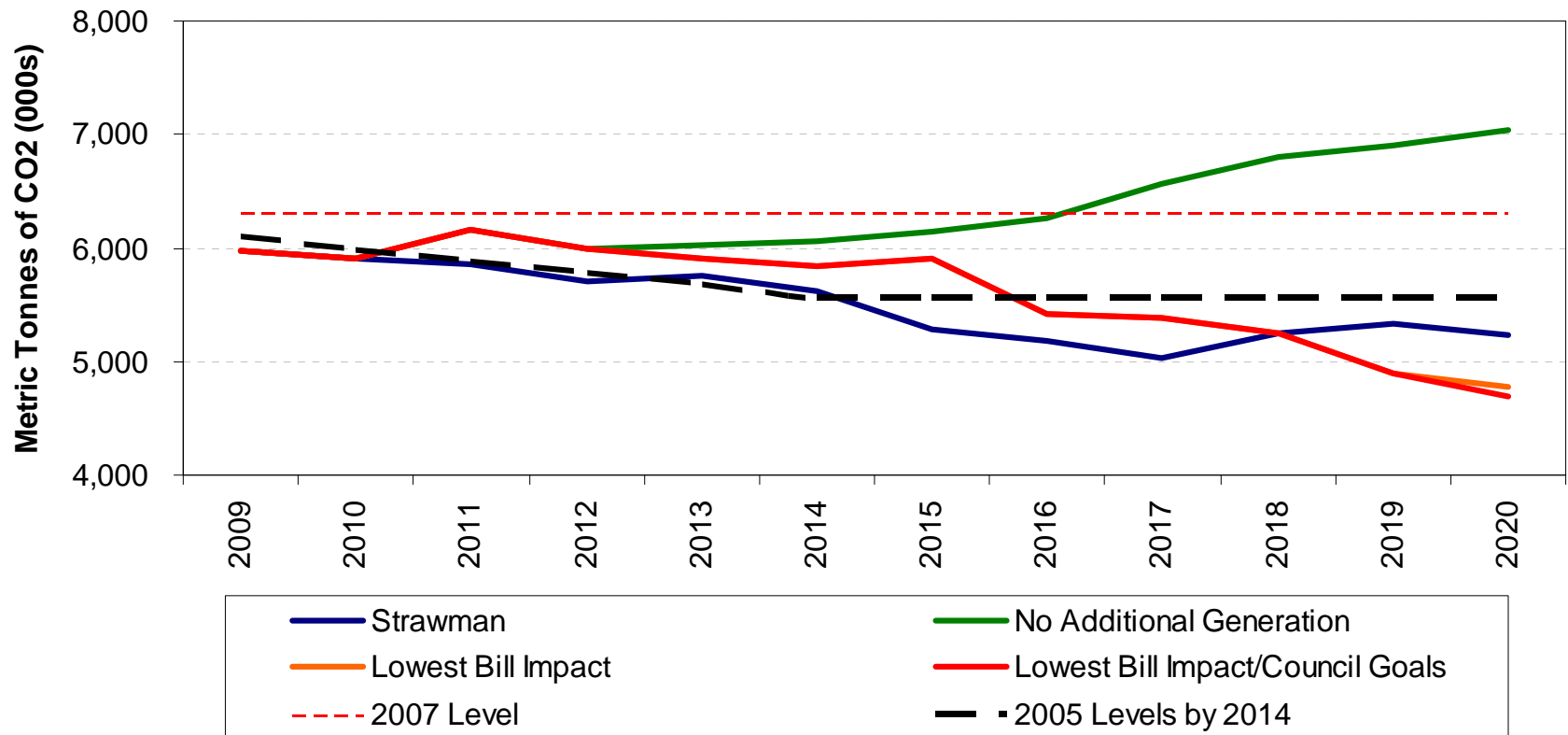
Cost per MWh Comparison of Cases

- The *Lowest Bill Impact* scenario relies on market purchases or a market-based PPA in the near term and is thus the same as the scenario with no additional generation
- Beyond 2015, the *Lowest Bill Impact* scenario adds cost-effective renewable capacity to hedge against increasing natural gas and CO2 prices
- Council RPS goal (minus solar target) can be met with lowest bill impact



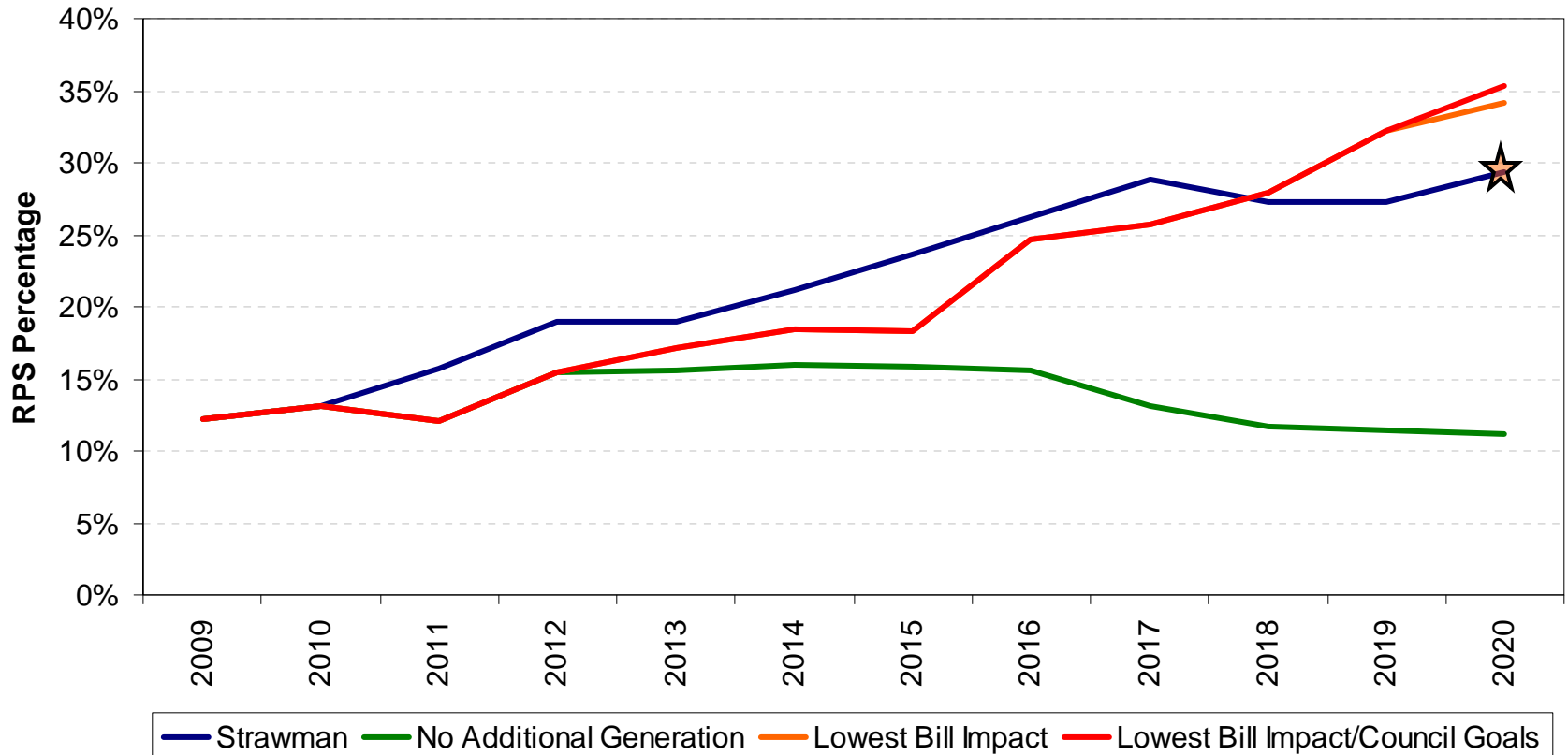
Case Comparison: CO₂ Emissions

- The *No Additional Generation* Scenario emissions rise over time as portfolio has fewer renewable additions and more exposure to CO₂ associated with market purchases
- The *Lowest Bill Impact* Scenario has lowest emissions by 2020 due to more cost-effective renewable additions in the out years as compared to the *Strawman*



Case Comparison: RPS

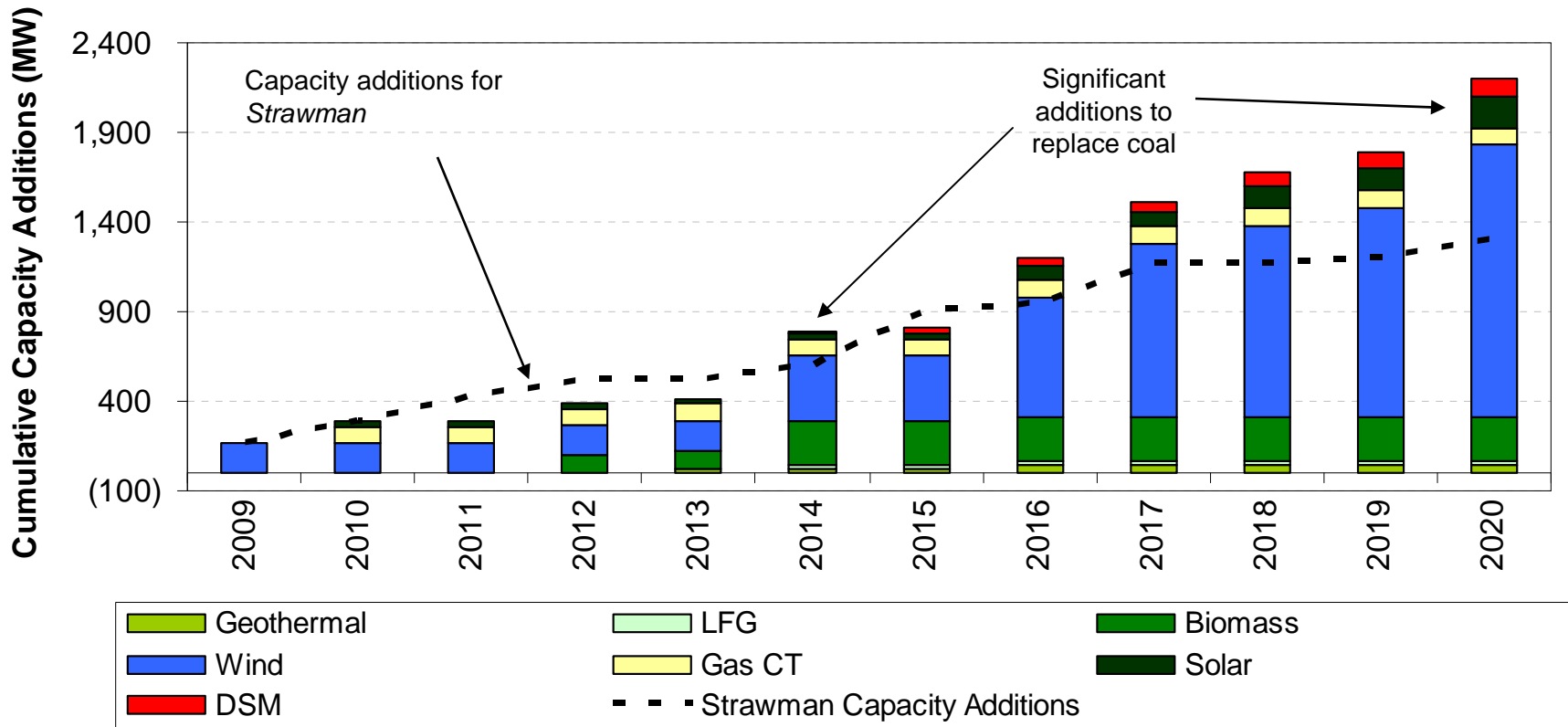
- *Lowest Bill Impact Meeting Council Goals* has extra 70 MW of solar
- Lowest bill impact portfolios have lower RPS levels in the near to intermediate term, but meet goal of 30% by 2020
- *No Additional Generation* portfolio reaches 15% RPS with contractual agreements, but declines back towards 10% as existing contracts expire



Replace FPP

Replace FPP Annual Capacity Expansion Plan

- Expansion plan (2009-2020) includes 100 MW Natural Gas, 1,515 MW wind, 180 MW solar, 250 MW biomass, 50 MW Geothermal, 15 MW LFG, and 98 MW DSM
 - Most significant new capacity additions are required in 2014 and 2020 to replace coal units
 - Near term needs are met through market purchases or through a market PPA

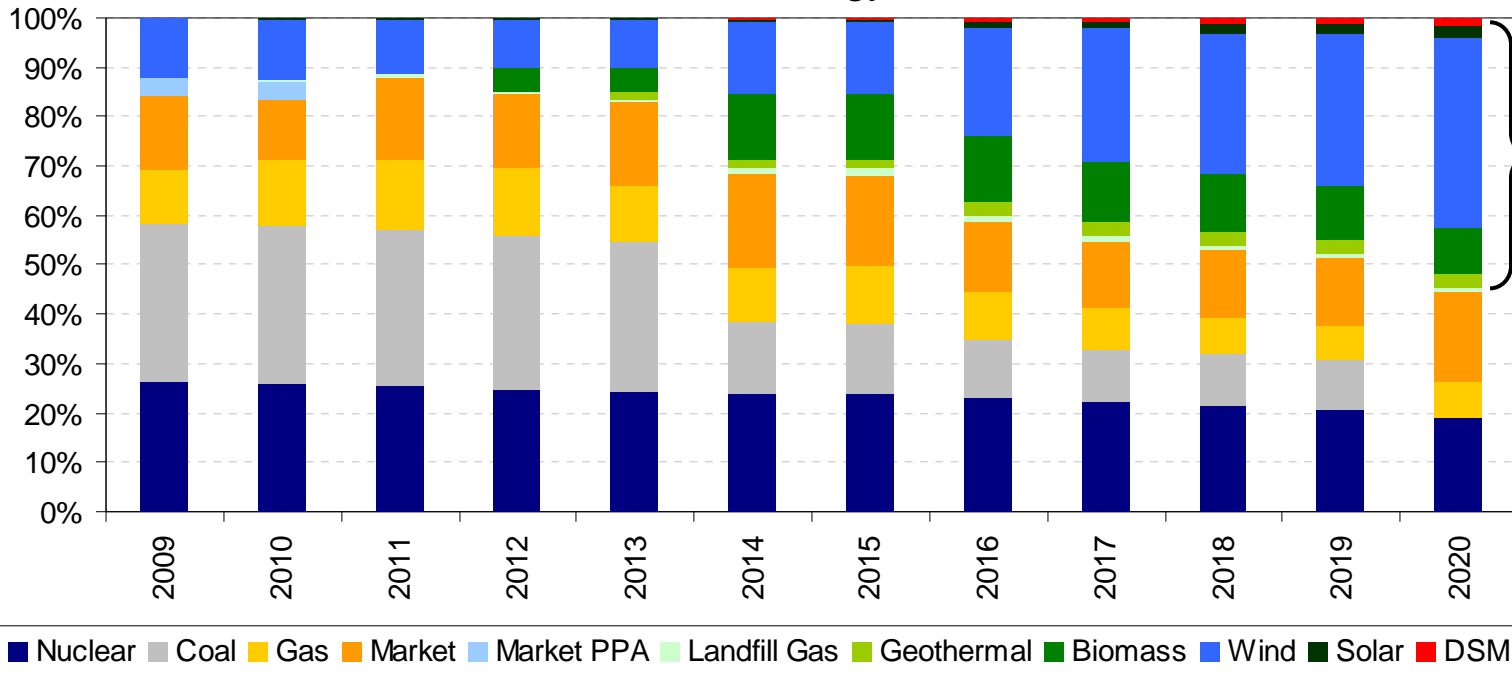


Replacement of FPP Can be Made Cost-Effectively with Renewables

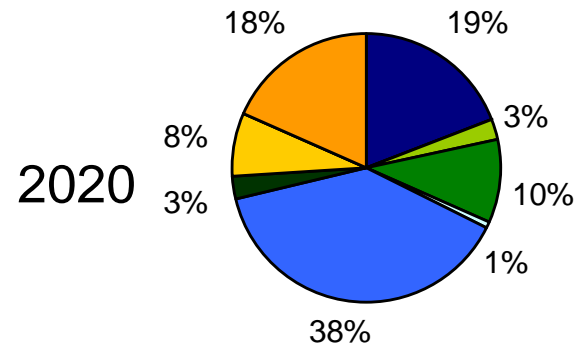
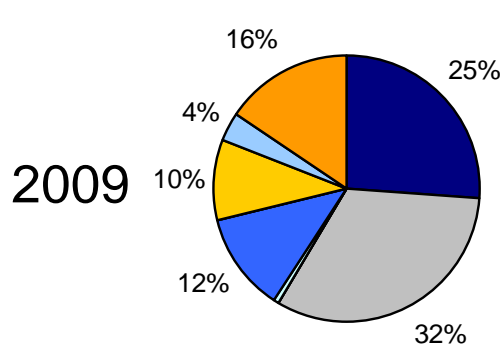
- Renewable options are most cost-effective additions to replace coal unit, given reference case assumptions regarding natural gas prices and CO2 costs through 2020
 - Replace FPP with renewables *is lowest cost portfolio* for Replace FPP scenario
- Significant wind additions (over 1,500 MW through 2020) are required
 - Question as to whether Austin could acquire such substantial amounts of wind capacity in the next 10 years and whether it will be available without congestion costs
- Moderate amounts of solar are effective to complement expected hourly wind availability
- Biomass (150 MW) preferable as baseload replacement, due to hedge against natural gas and environmental compliance costs
- Balancing supply due to wind intermittency is best done with power market purchases (with deterministic forecast) as opposed to investing capital in a new combined cycle plant
 - Power market prices, however, are highly uncertain

Replace FPP Annual Generation for Native Load

Energy Shares

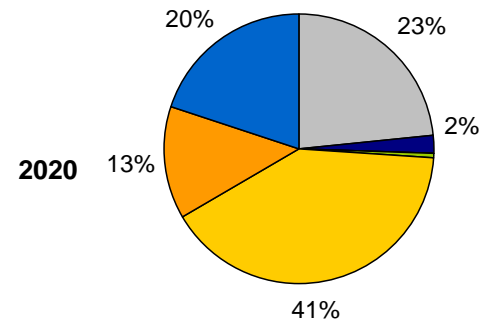
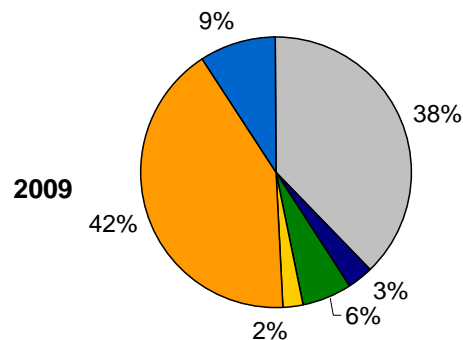
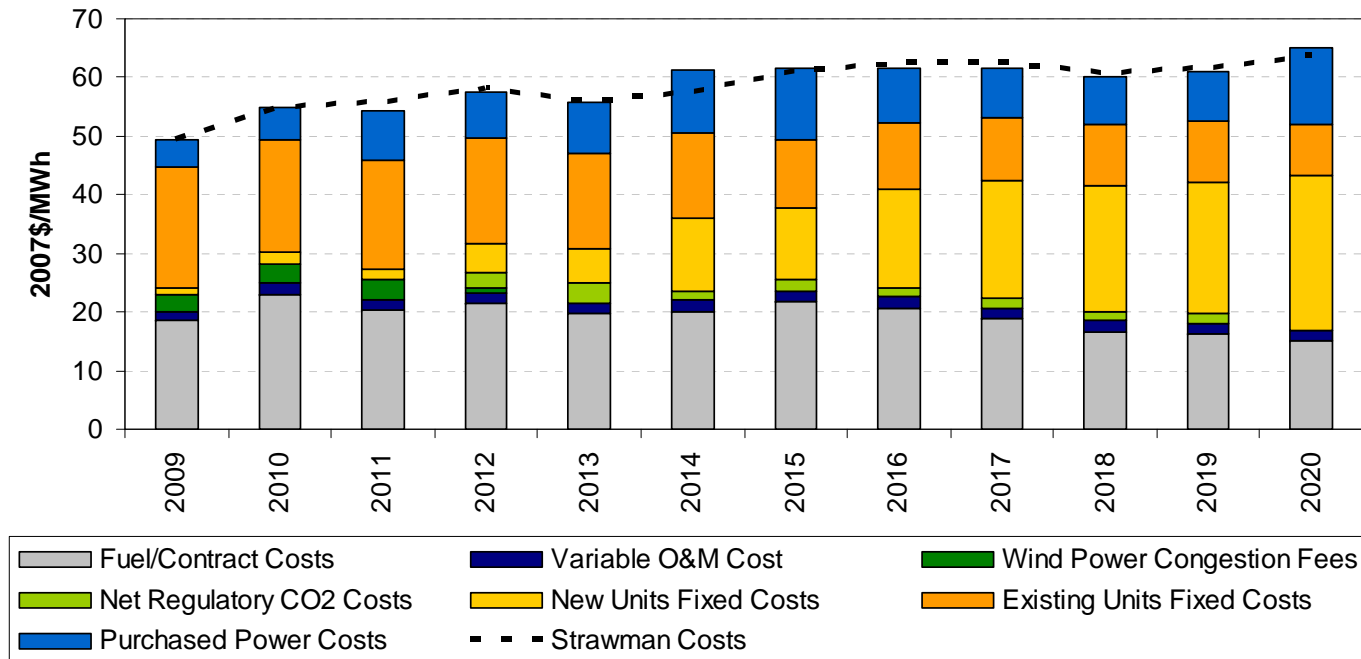


Renewable share above 30% by 2014 and above 50% by 2020








Replace FPP Scenario Portfolio Costs

- Slightly higher than *Strawman* in 2020 due to significant new capacity additions and increased market purchases
- Benefits include complete reduction of carbon compliance cost liabilities and reduced fuel costs associated with burning coal



Scenario Comparison Summary

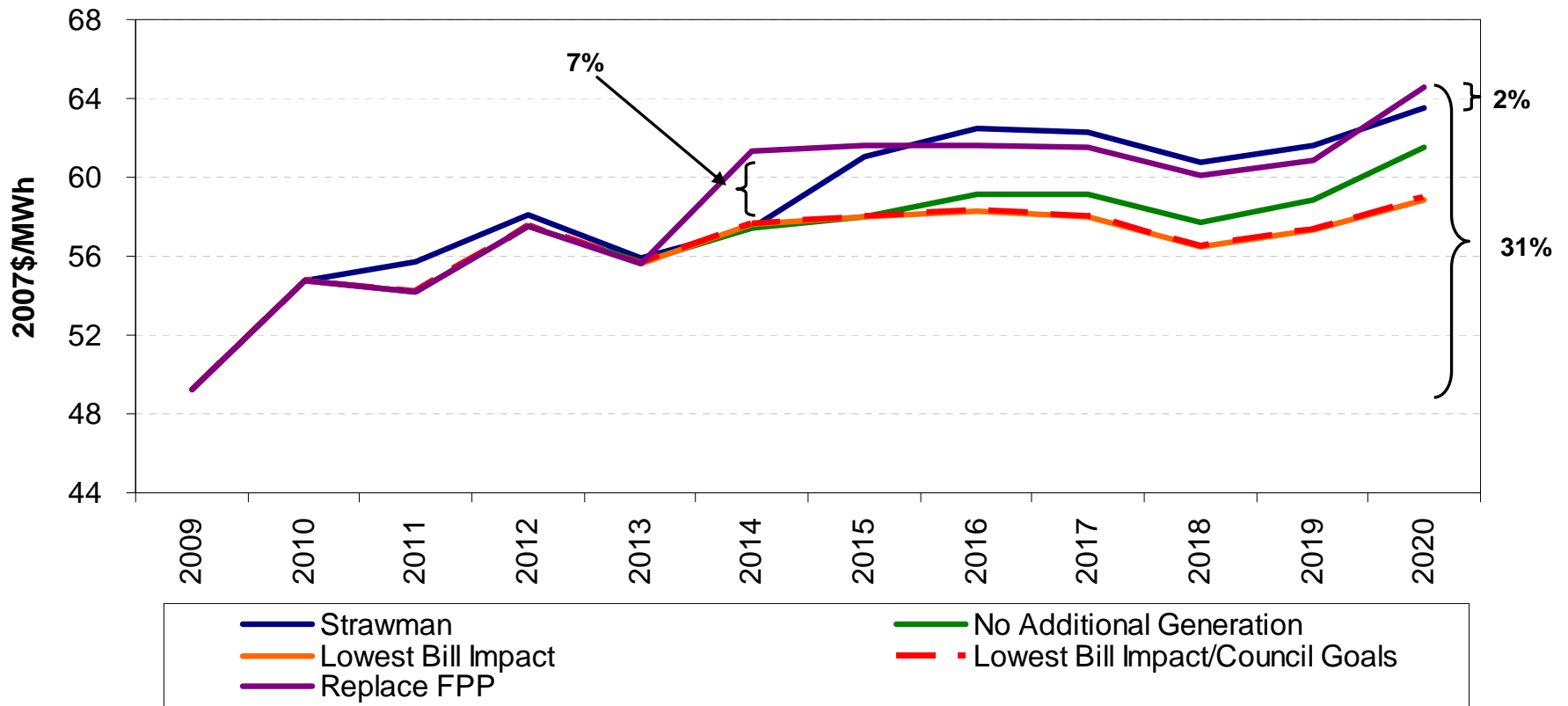
Scenario Summary

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Replacements		MW	0	0	0	0	600 (Coal)
Levelized NPV of Portfolio Costs		2007 \$/MWh	57.97	56.51	56.01	56.01	57.96
Real Increase from 2009 to 2020		%	29%	25%	20%	20%	31%
Nominal Increase from 2009 to 2020		%	69%	64%	57%	57%	72%
CO2 Emissions 2014 (Target 5,557)		Tonnes (000s)	5,618	6,066	5,848	5,848	4,087
2014 CO2 Percent Reduction from 2007		%	11%	4%	7%	7%	35%
Renewable Percentage in 2020		%	30%	11%	34%	35%	54%
Total Capital Expenditures		\$MM	1,796	76	2,012	2,175	3,949
Incremental Capacity Additions		Share					



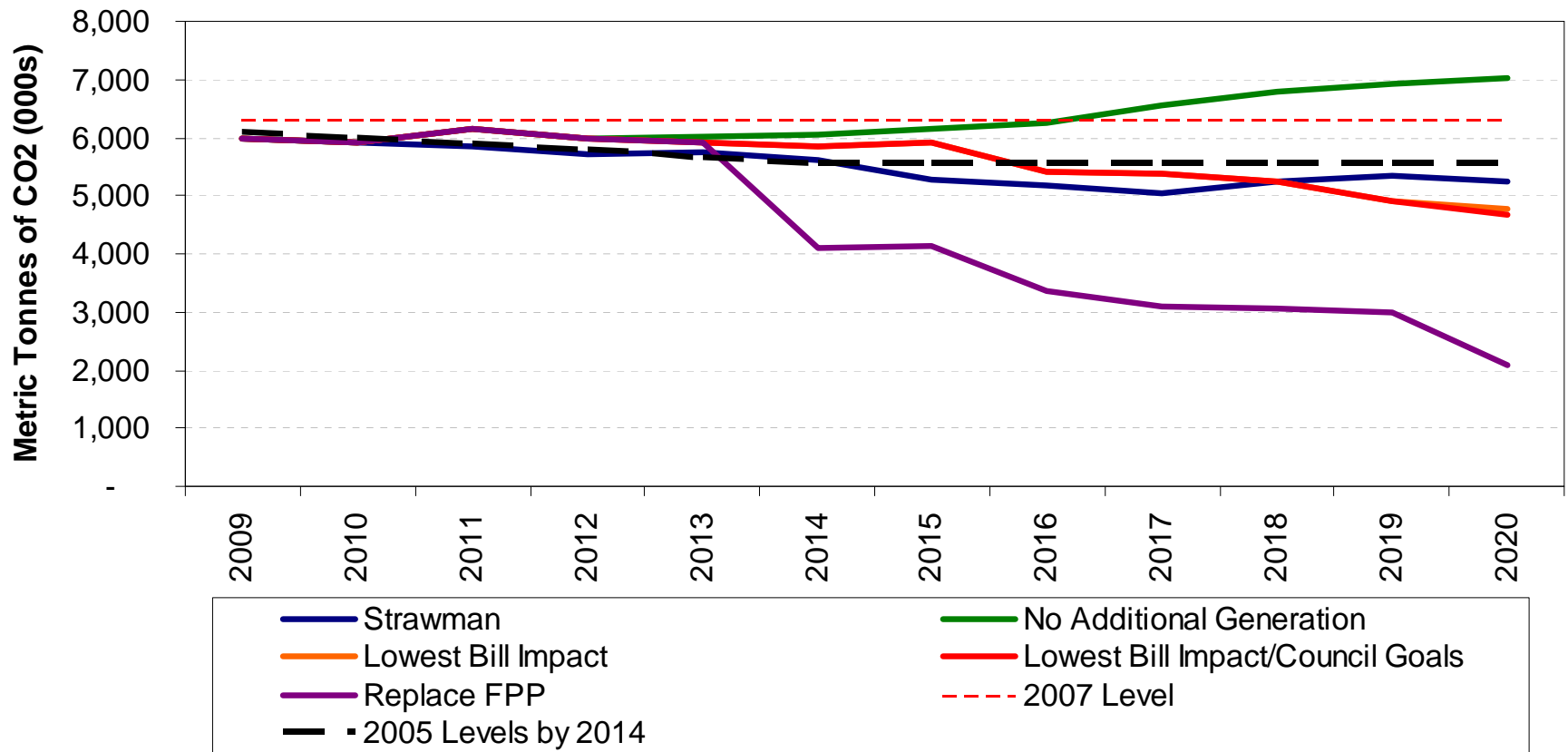
Cost per MWh Comparison of Cases

- *Replace FPP* scenario increases expected costs in 2014 by 7%
- However, if sufficient renewable capacity additions can be deployed, costs are expected to be close to the *Strawman* due to reliance on market and renewable expansion instead of capital expenditures for a new combined cycle plant



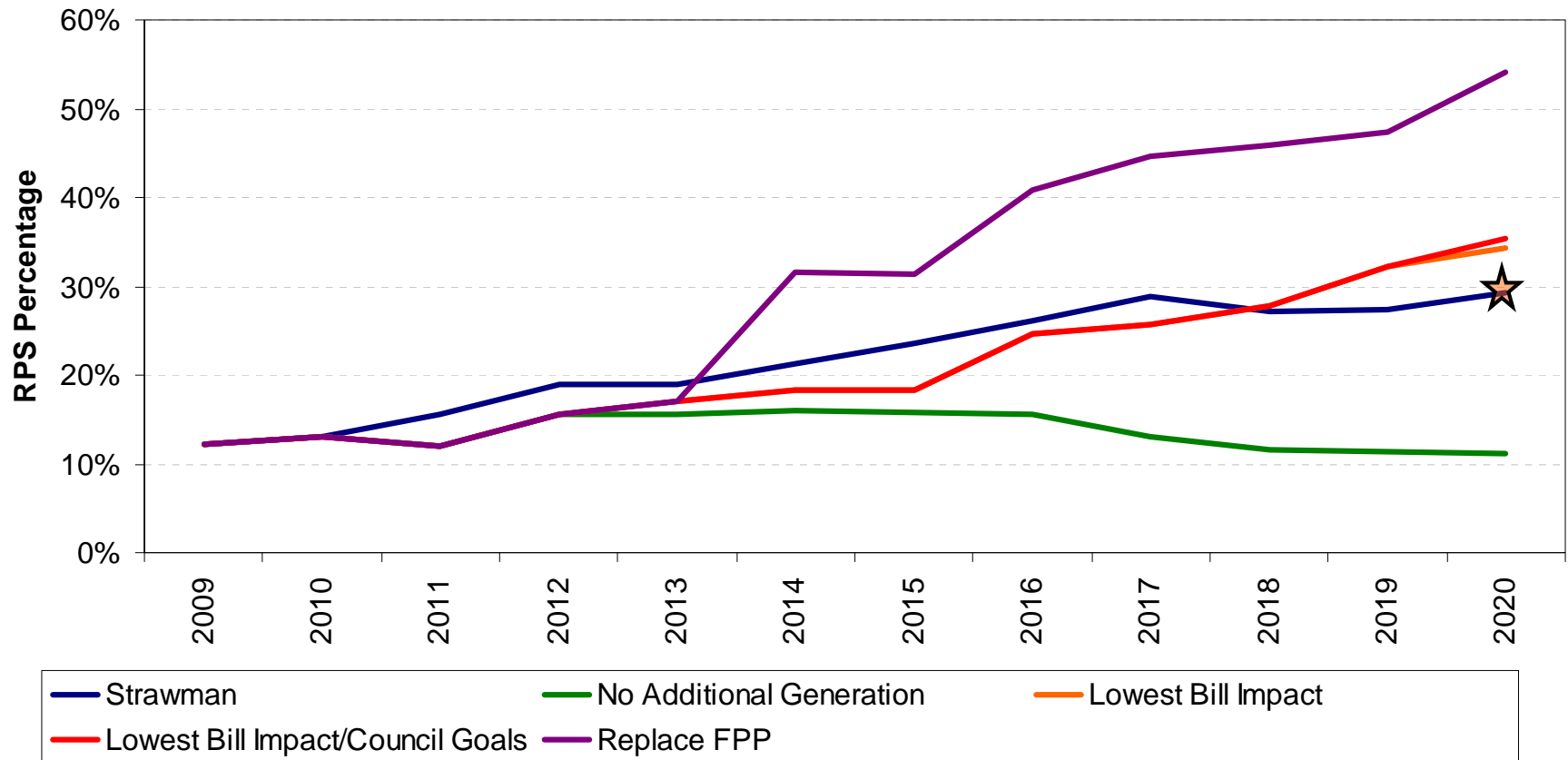
Case Comparison: CO₂ Emissions

- Replacement of FPP significantly lowers CO₂ emissions by 2014 (35% below 2007 levels)
- Significant additional emission reductions are achieved by 2020



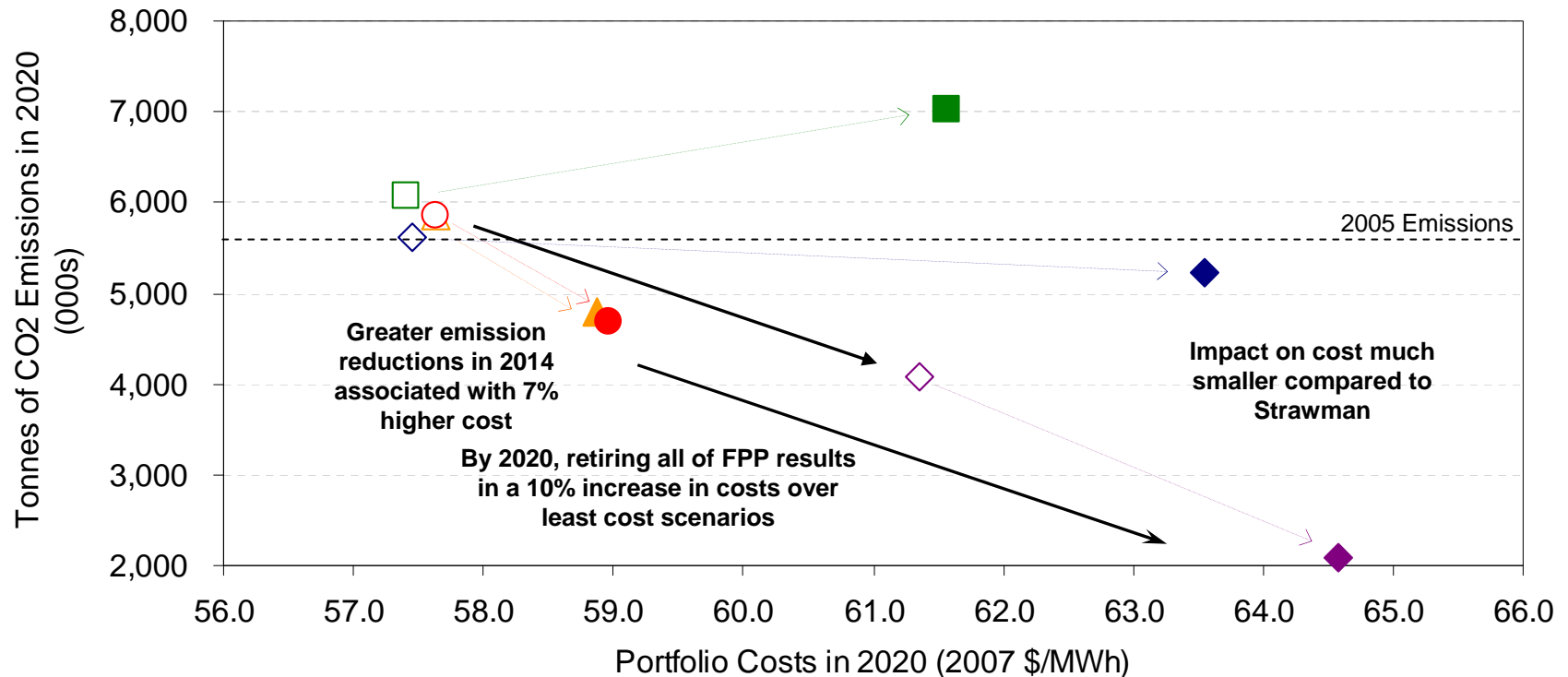
Case Comparison: RPS

- *Replace FPP* scenario results in significantly higher RPS levels, due to cost-effective replacement with renewables



Significant Reductions in CO2 Emissions Come at a Cost

- Assuming reference case market conditions and availability of renewable resources, every additional 10% of CO2 emission reduction from 2007 levels costs about \$1.15/MWh in real dollars (or about 2% of total costs)
- Alternatively, every additional \$1/MWh in costs results in an 11% reduction in CO2 emissions from 2007 levels



◇ Strawman □ No Additional Generation △ Lowest Bill Impact ○ Lowest Bill Impact/Council Goals ◇ Replace FPP

Overall Conclusions

- *Strawman* expected to increase costs by 29% in real terms from 2009 to 2020, reduce emissions by 11% below 2007 levels by 2014, and achieve 30% RPS by 2020
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 - Delays significant new generation until after 2015 (No combined cycle)
 - Meets all Council Goals except 100 MW of solar additions
 - Adding 70 MWs of Solar in 2020 adds little to costs.
 - Adds about 100 MW of additional DSM
- *Replace FPP* Scenario expected to increase costs by about 31% by 2020, reduce emissions 35% below 2007 levels by 2014, and achieve 54% RPS by 2020
 - Significant early cost increase above all other scenarios in 2014 when initial coal replacement occurs
- Key Tradeoffs:
 - How quickly to reduce carbon emissions and increase renewable share, given the cost impacts of early capacity additions
 - Which risks to mitigate (CO2 prices, capital costs, fuel and power prices)
 - How much are you willing to pay in order to reduce CO2 emissions and increase renewable generation

Upcoming Scenario Analysis

	Meets 30% Renewable Energy Goal	Meets 100 MW Solar Goal	Includes 700 MW DSM	Includes Existing Generation Units & Contracts	No Replacement of Existing Units before 2020	Meets AE Peak Demand and Energy Requirements	Allows any combination of supply and demand side options	Phased Replacement of FPP, 300 MW 2014, 300 MW 2020	Adds 200 MW Nuclear PPA in 2017	Eliminates Sand Hill CC addition planned for 2015	Assumes 400,000 plug-in vehicles by 2020	Assumes solar technology breakthrough (60% reduction in capital costs by 2020)
Draft Energy Resource Plan "Strawman"	✓	✓	✓	✓	✓	✓						
No Additional Generation			✓	✓	✓	✓				✓		
Lowest Bill Impact			✓	✓	✓	✓	✓					
Lowest Bill Impact Meeting Council Goals	✓	✓	✓	✓	✓	✓	✓					
Replace FPP: Renewables	✓	✓	✓	✓		✓		✓				
Replace FPP: Low Cost, Low Carbon			✓	✓		✓	✓	✓				
Waxman-Markey Draft CO2 Bill	✓	✓	✓	✓	✓	✓						
Strawman with Impact of the Electrification of the Transportation Sector	✓	✓	✓	✓	✓	✓					✓	
Strawman with Solar Technology Breakthrough	✓	✓	✓	✓	✓	✓						✓
Strawman with Nuclear Addition	✓	✓	✓	✓	✓	✓		✓	✓			
Pecan Street Renewable Plan	✓	✓	✓	✓		✓	✓			✓		

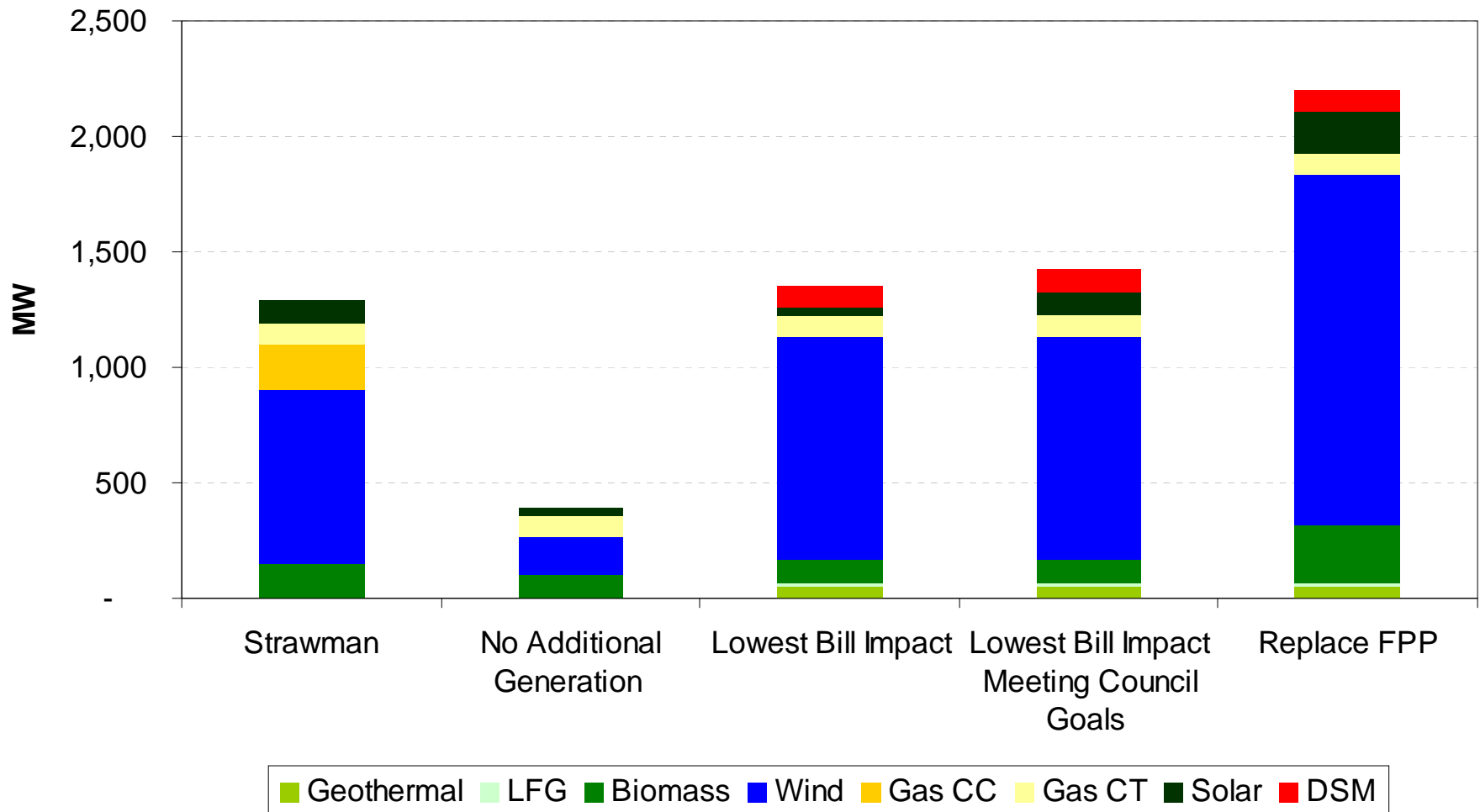
**APPENDIX:
Capacity Addition
Comparisons by Scenario**

Annual Capacity Addition Summary by Scenario

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total MW	Share
Draft Energy Resource Plan "Strawman"	165 W	100 CT 30 S	135 W	100 Bio		50 W 20 S	200 CC 100 W	50 Bio	200 W 20 S		30 S	100 W	1,295	
No Additional Generation	165 W	100 CT 30 S		100 Bio									390	
Lowest Bill Impact	165 W	100 CT 30 S		100 Bio	25 Geo	15 LFG 14 DSM	14 DSM	200 W 25 Geo 14 DSM	150 W 14 DSM	150 W 14 DSM	200 W 14 DSM	100 W 14 DSM	1,353	
Lowest Bill Impact Meeting Council Goals	165 W	100 CT 30 S		100 Bio	25 Geo	15 LFG 14 DSM	14 DSM	200 W 25 Geo 14 DSM	150 W 14 DSM	150 W 14 DSM	200 W 14 DSM	100 W 70 S 14 DSM	1,423	
Replace FPP	165 W	100 CT 30 S		100 Bio	25 Geo	200 W 15 LFG 150 Bio 14 DSM	14 DSM	300 W 50 S 25 Geo 14 DSM	300 W 14 DSM	100 W 50 S 14 DSM	100 W 14 DSM	350 W 50 S 14 DSM	2,203	

■ Gas
 ■ Wind
 ■ Solar
 ■ LFG
 ■ Geo
 ■ Bio
 ■ DSM

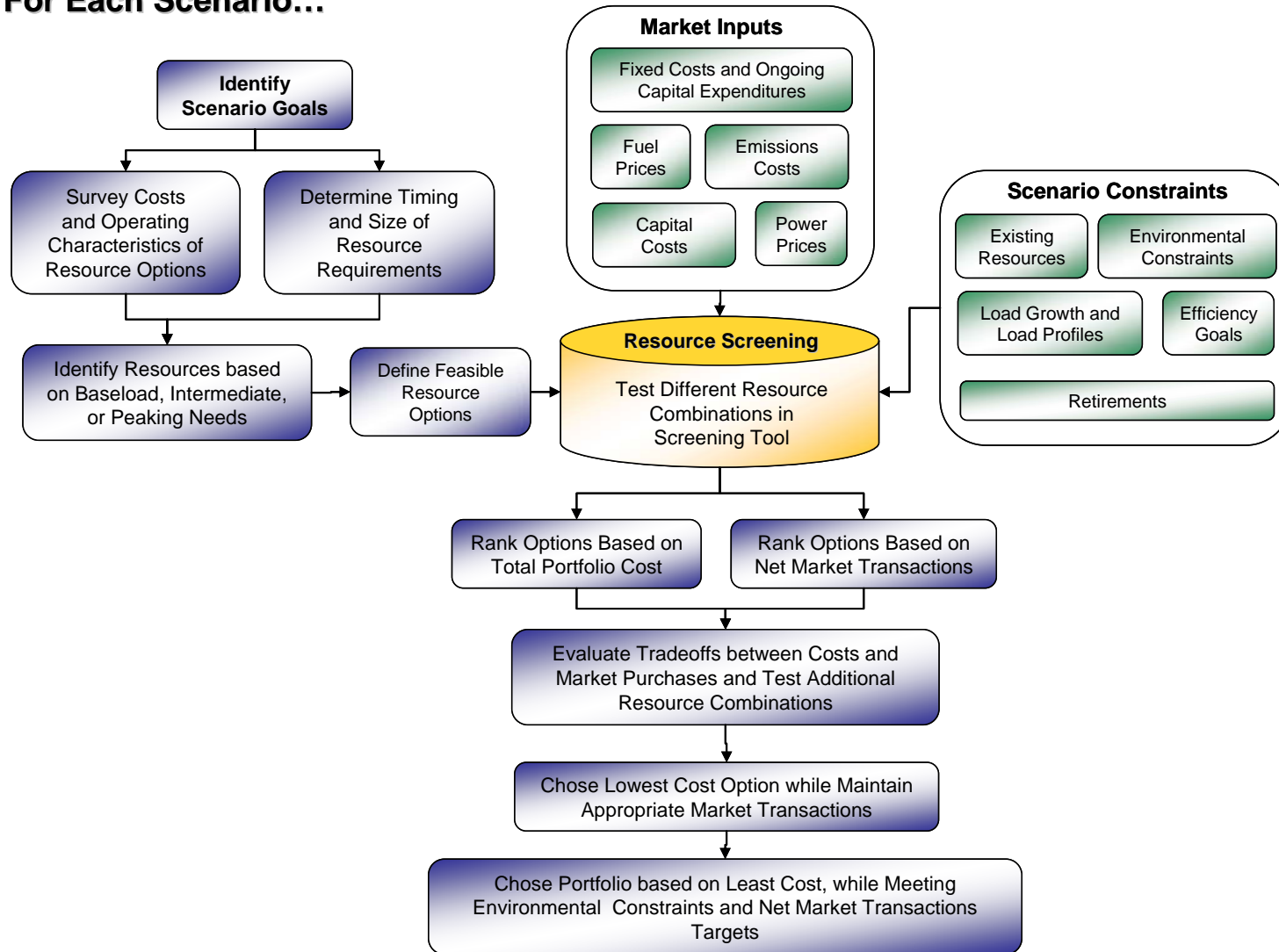
Total Capacity Additions by Scenario (2009-2020)



APPENDIX: Methodology and Assumptions

Process for Scenario Analysis and Evaluation

For Each Scenario...



Portfolio Development Methodology

1

Resource
Screening

- Develop technology cost and operational estimates
- Test cost (and environmental) impacts of incremental resource additions on portfolio
- Rank resource options in aggregate and according to type
- Analyze feasibility restrictions

2

Scenario
Parameter
Definition and
Analysis

- Identify portfolio timing and resource needs (baseload, intermediate, peaking)
- Examine performance of portfolios comprised of highest ranked resources
- Eliminate options that violate scenario constraints (ex: high market sales)
- Test different combinations of resource types to meet hourly load and environmental goals

3

Portfolio
Refinement
and Selection

- Identify expansion plan concepts that meet constraints at lowest cost
- Test impacts of changing resource timing, sizing, and relative portfolio composition
- Choose portfolio that results in lowest cost

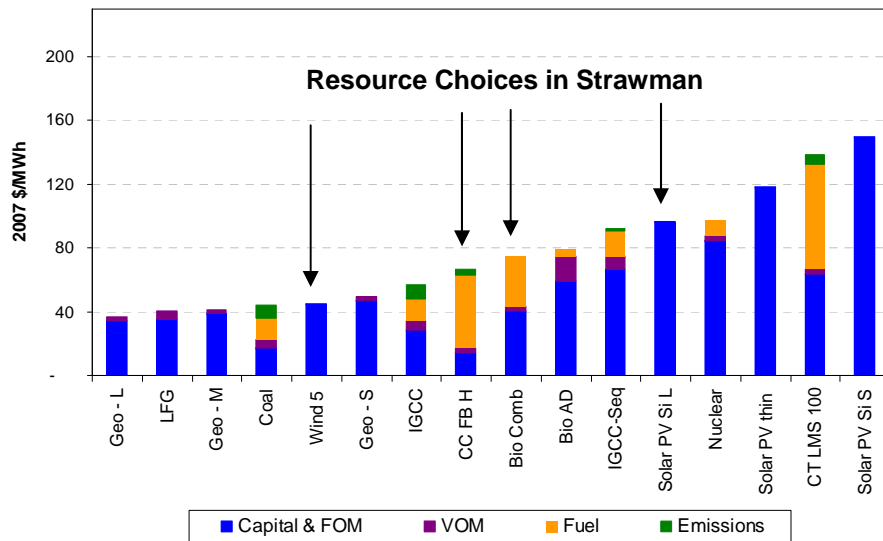
Operational Assumptions for New Units

Technology	Early Capital Cost (2009-2015)	Mid Capital Cost (2016-2020)	VOM	FOM	Heat Rate	Block Size
	\$/kW	\$/kW	\$/MWh	\$/kW-yr	Btu/kWh	MW
CC (FA)	833	823	2.90	7.37	7,400	263
CC (FB, H)	811	802	2.90	11.23	7,000	400
CT (LM6000PD)	799	763	3.65	6.32	10,600	48
CT (LMS 100)	771	762	3.65	6.32	10,117	99
Coal - Supercritical	1,822	1,805	4.87	14.19	9,300	583
IGCC*	2,558	2,791	6.49	36.33	9,300	770
IGCC w/Seq*^	3,355	3,659	8.76	45.62	10,883	745
Nuclear*	5,518	5,903	2.63	74.58	10,434	1,090
Biomass - AD	6,659	6,753	15.20	50.68	17,962	<2
Biomass - Comb.	2,893	2,857	3.04	131.77	15,513	25
Land Fill Gas	2,835	2,799	5.07	46	11,569	<2
Wind 1.5 MW	2,232	2,200	0.00	20.55	na	50
Wind 5 MW	2,111	2,090	0.00	20.55	na	50
Solar PV - S - Si	5,122	3,643	0.00	6.02	na	< 1
Solar PV - L - Si	3,270	2,326	0.00	6.02	na	>20
Solar PV - S - Thin	4,000	3,399	0.00	6.02	na	< 1
Solar CSP - Trough	4,373	4,252	0.00	30.41	na	63
Solar CSP - Tower	5,995	5,852	0.00	30.41	na	63
Geothermal - S	5,182	5,218	2.28	45.61	na	<5
Geothermal - M	4,425	4,456	2.28	45.61	na	5-30
Geothermal - L	3,782	3,809	2.28	45.61	na	>30

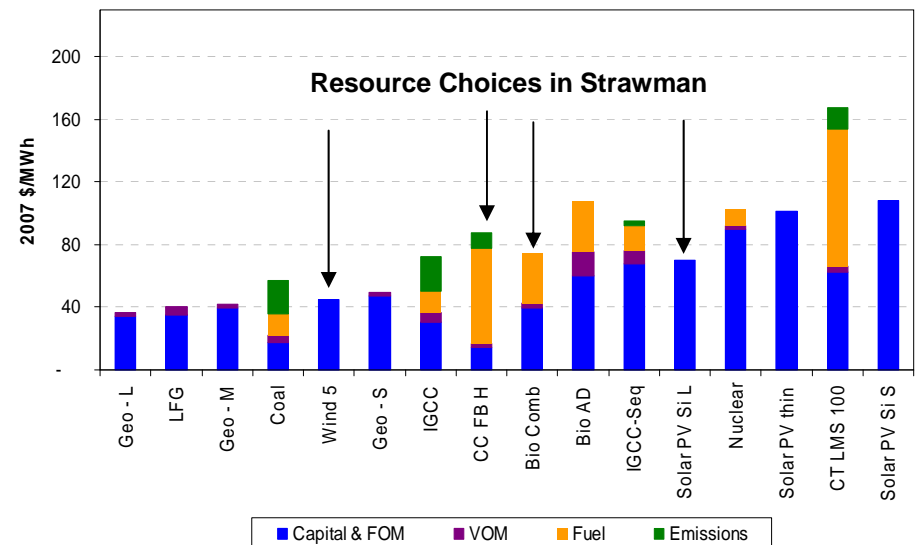
Levelized Cost Comparison - \$/MWh

- Levelized costs for geothermal, wind, and LFG are generally lowest, with solar costs expected to decline most significantly over time
- Coal costs are expected to rise over time with the addition of increasing carbon compliance costs. Gas units' generation costs increase over time due to rising fuel costs

2012



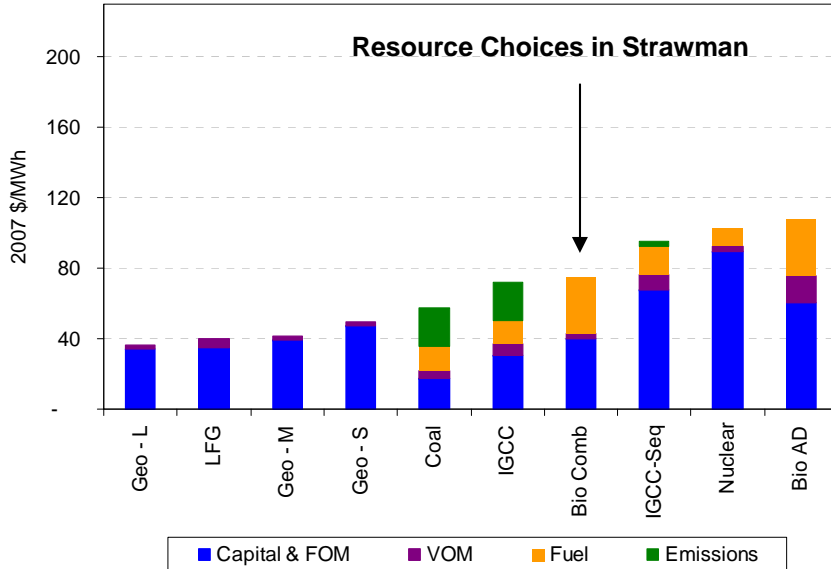
2020



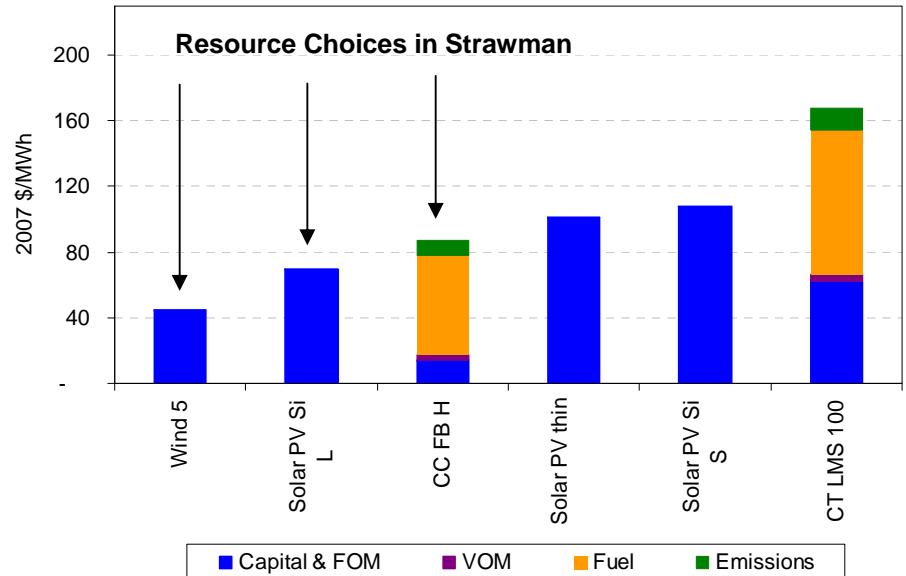
Levelized Costs for 2020 by Resource Type

- Portfolio resource additions depend on type of capacity required for AE system
- Baseload resource additions can be analyzed separately from other resources that are intermediate/peaking or intermittent

Baseload Resources



Intermediate/Intermittent/Peaking Resources



Preferred Resources for Portfolio Creation

- We screened 10 baseload, 7 intermittent, 2 intermediate, and 2 peaking resources
- In the Screening analyses we found that
 - Portfolios with LFG and Geothermal resources are lowest cost generation additions
 - Availability analysis, however, indicates that these resources are limited
 - Coal plants are higher cost than many renewable options
 - Although low cost in the near term, they are exposed to CO₂ prices in out years, which is expected to raise their costs above certain renewable options by 2020
 - Wind resources are more favorable than coal in the long term, due to their zero emission profile
 - Solar projects are expected to have declining costs beyond 2020, due to additional expected reductions in capital costs and increasing CO₂ costs
 - Peak output of solar units corresponds with peak power market price hours

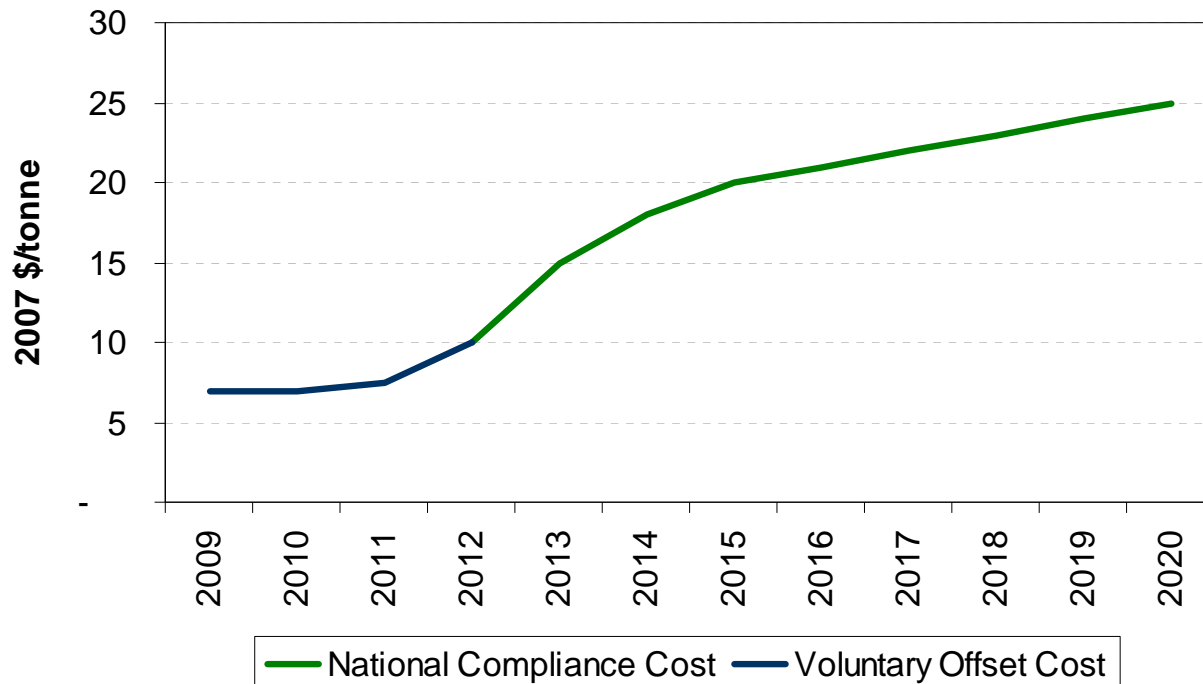
Additional DSM Deployment

- New Demand Side Management projects available to meet resource needs
- Projects assumed to have a 10-year life with subsequent renewal
- Costs assumed to all be incurred during year of implementation, according to the price estimates below

Additions	Cost
1st 100 MW	\$500/kW
2nd 100 MW	\$625/kW
3rd 100 MW	\$781/kW

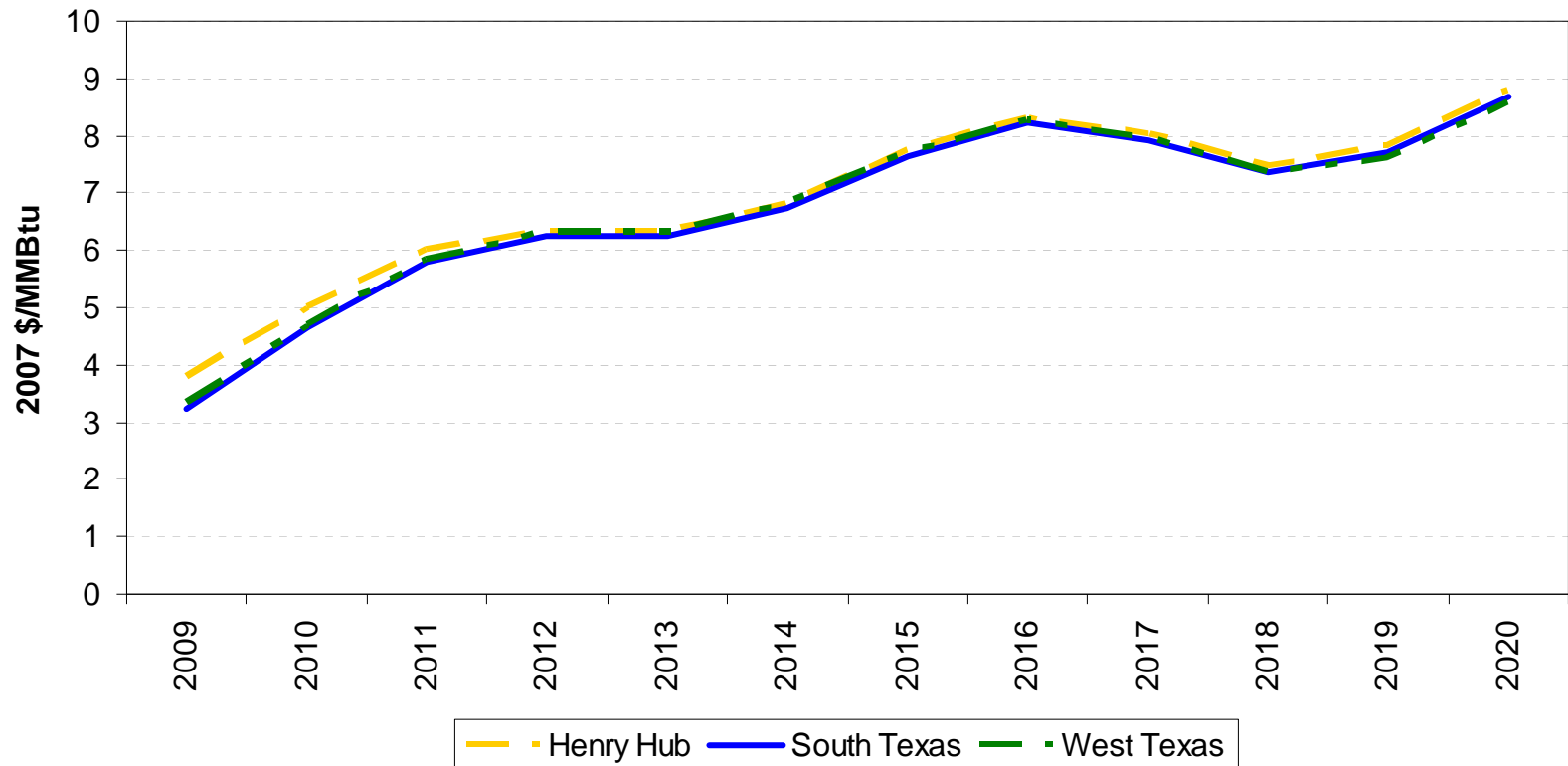
CO₂ Compliance Cost Projection

- Pace anticipates that any passed legislation will impart carbon reductions via a market-based cap & trade scheme
 - Pace assumes that the U.S. carbon policy will include a number of different options for procuring supply of compliance instruments
 - Pace expects the carbon market design to include provisions intended to mitigate against undue market price spikes



Annual Prices of Natural Gas

- Pace forecasts the U.S. market price for natural gas at the Henry Hub and then estimates regional gas prices based on basis differentials
- Short-term prices have significantly decreased. Over the long-term, Pace expects natural gas prices to increase steadily
- South Texas prices closely in line with Henry Hub



Analysis Updates and Changes

- ERCOT market forecast
 - Updated natural gas price projections, using market forwards in April
 - Updated load forecast for the entire region, reflecting economic downturn in the near term and significant efficiency and demand side deployment in the longer term
- DSM Costs
 - Incorporated \$400/kW cost for 700 MW of DSM embedded in forecast
- Carbon Allocation Value
 - Now assume that AE will be *freely* allocated a declining share of emission allowance credits over time (30% in 2012 to 13% in 2020)