



Austin Energy Solar Programs RMC Presentation

September 17, 2013



Presented by:
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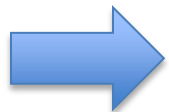
Our Objectives With RMC Meetings



- Current Status of AE Solar Programs
- Further Defining Our Future Solar Programs
 - Elements
 - Amounts
 - Timing
 - Economics

Informed By:

- ✓ LSAC Report – Nov. 2012
- KEMA review of LSAC report – Oct. 2013
- AE Staff Review – In progress
- Value of Solar (VOS) – Oct. 2013
- Ongoing dialogue & analysis



Culminating in 2014 Generation Plan Update fall 2014

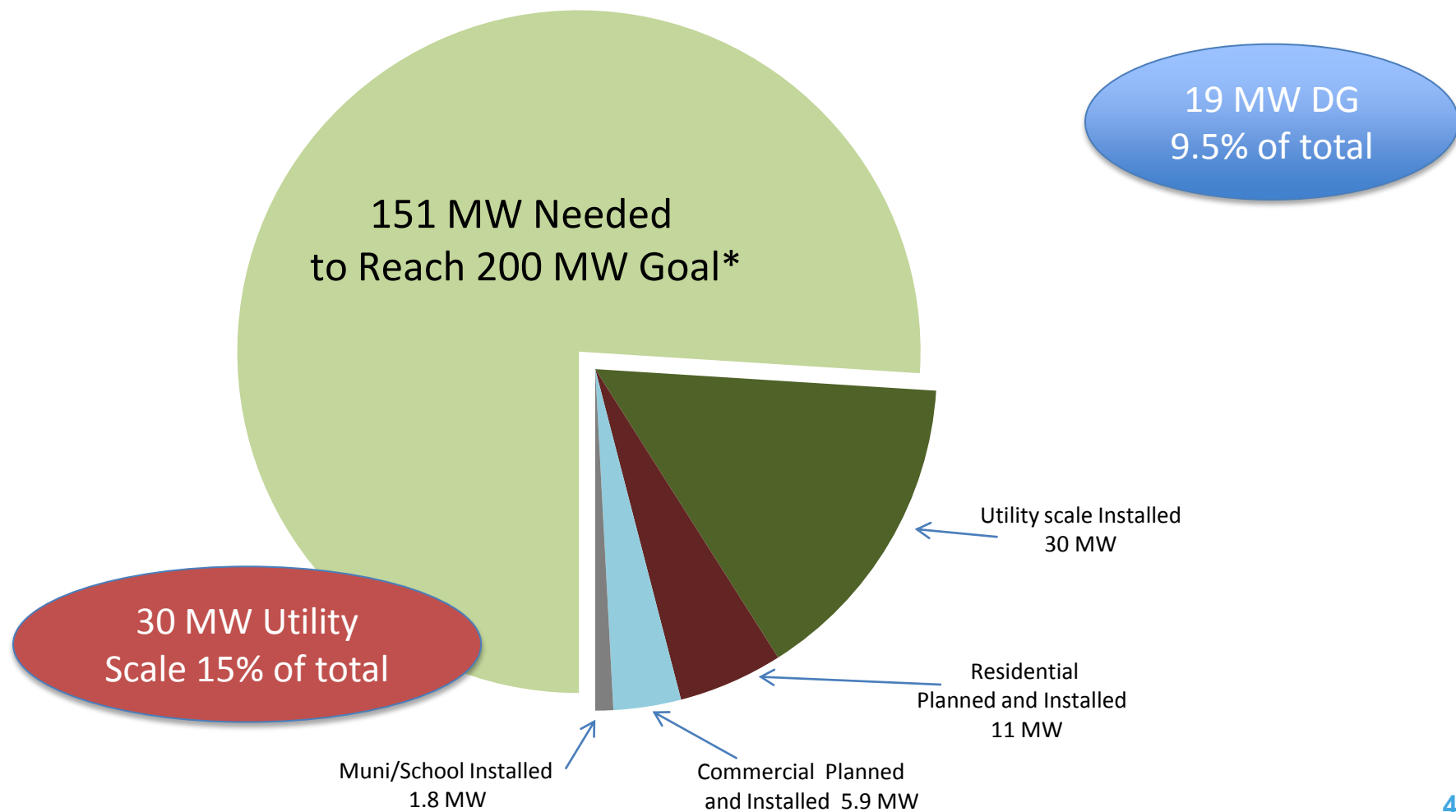
Tonight's Agenda



- Current Status of AE Solar Programs
- Overview LSAC Report –
 - Areas where AE and LSAC agree
 - Areas requiring future discussion
 - KEMA Review
- Status of VOS studies
- Next Steps

Solar PV Program

Planned and Installed Capacity at FYE13



* Goal increased from 100 MW to 200 MW in 2011

Consumer Solar Programs in FY 14



- Solar rebate budget: \$7.5 MM – Community Benefits Charge
 - \$6.07 MM: Residential Rebate
 - \$1.33 MM: Commercial PBI
 - \$0.10 MM: SWH Rebate
- \$7.50 MM Rebate

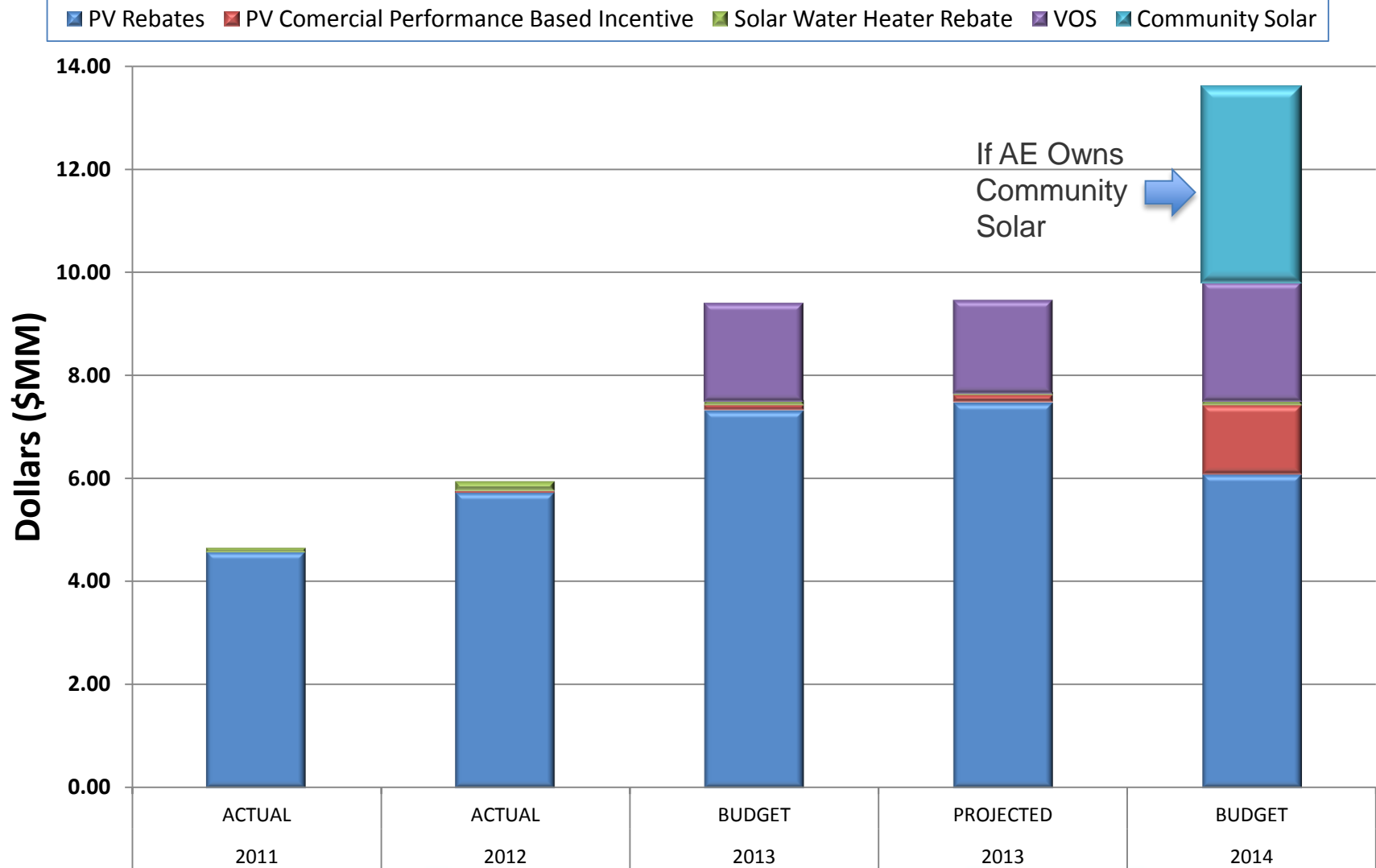
Plus:

- \$1.80MM: est. Gross VOS Payments in FY 2013, \$2.49MM: est. Gross VOS Payments in FY 2014 – Power Supply Adjustment
- \$3.80 MM: Community Solar * (Capital Improvement Program)

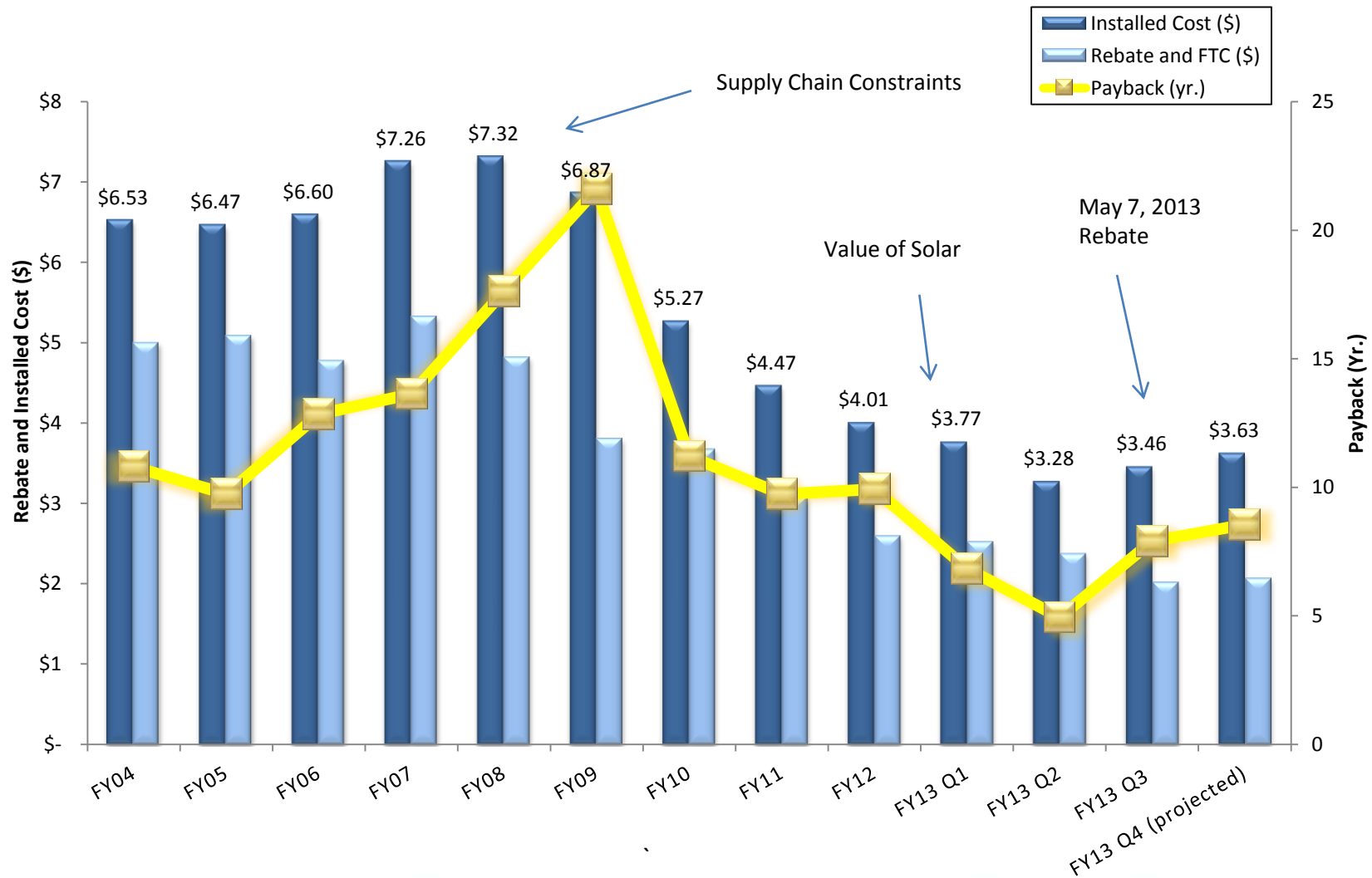
\$13.79 Million

* Excludes \$1.0 million for inter-connection costs; alternatively, may pursue via PPA.

Consumer Solar Programs Have Grown Rebates Have Declined



Consumer Solar Programs- Residential

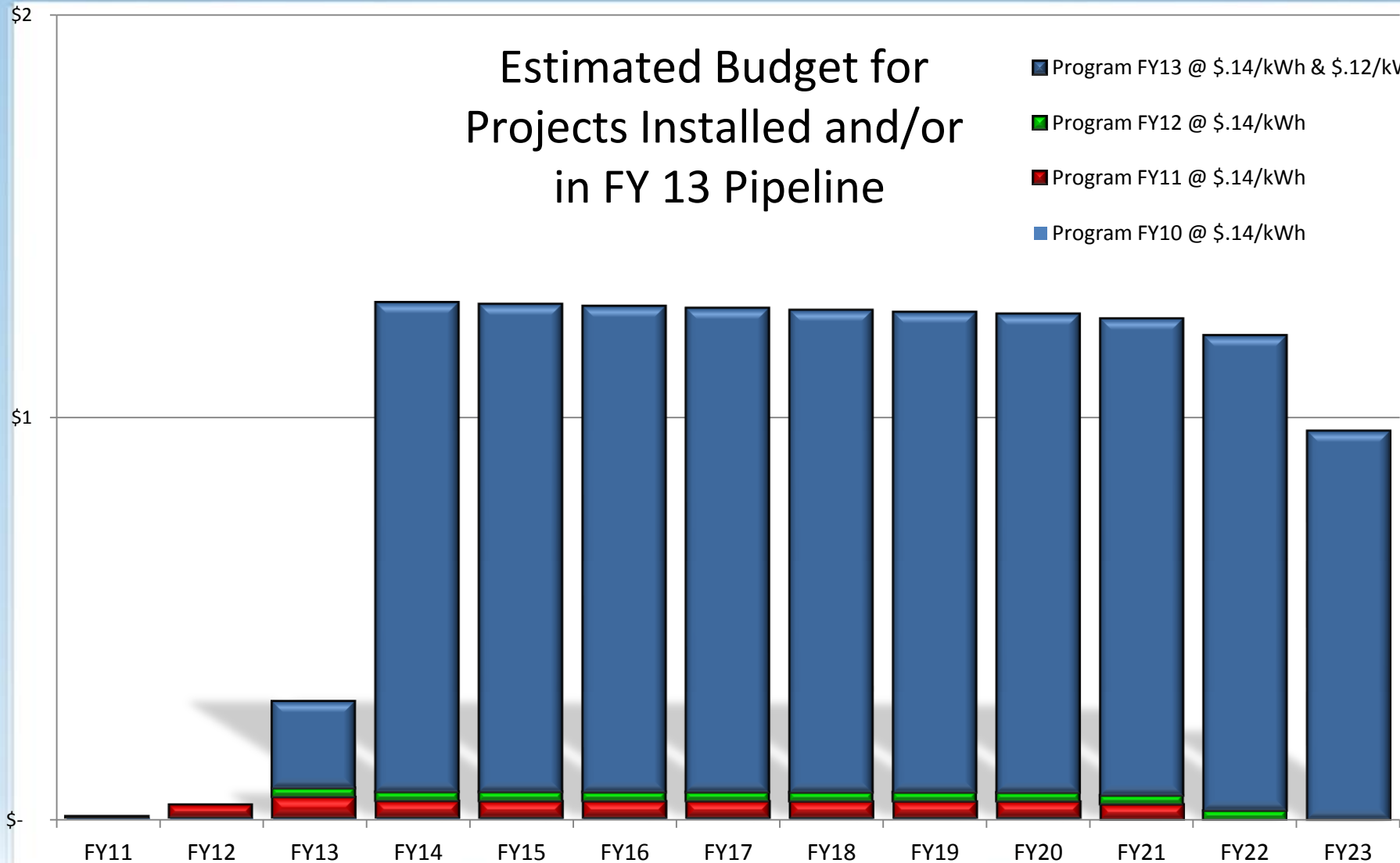


Consumer Solar Programs- Commercial



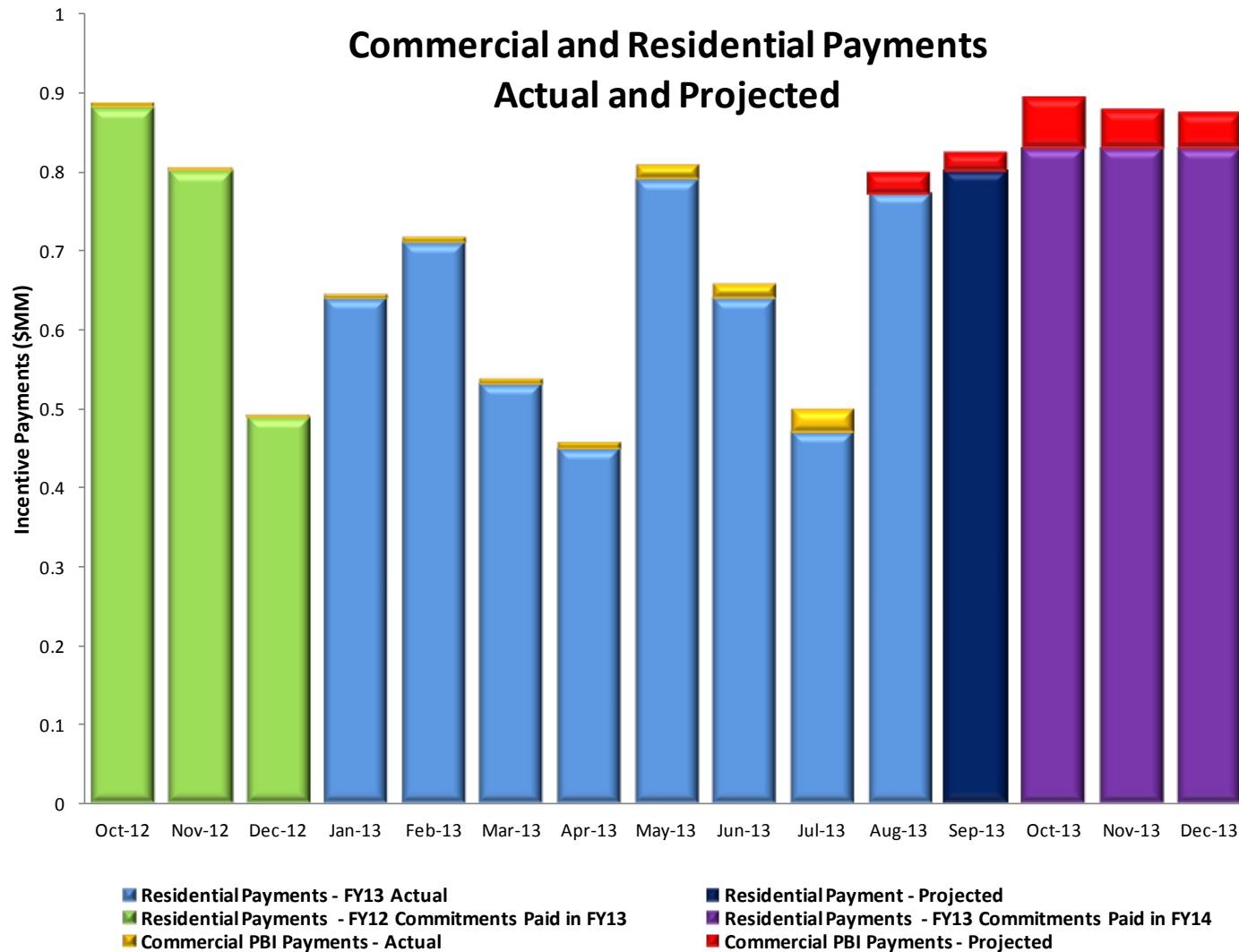
Estimated Budget for Projects Installed and/or in FY 13 Pipeline

- Program FY13 @ \$.14/kWh & \$.12/kWh
- Program FY12 @ \$.14/kWh
- Program FY11 @ \$.14/kWh
- Program FY10 @ \$.14/kWh



Consumer Solar – As of August 2013

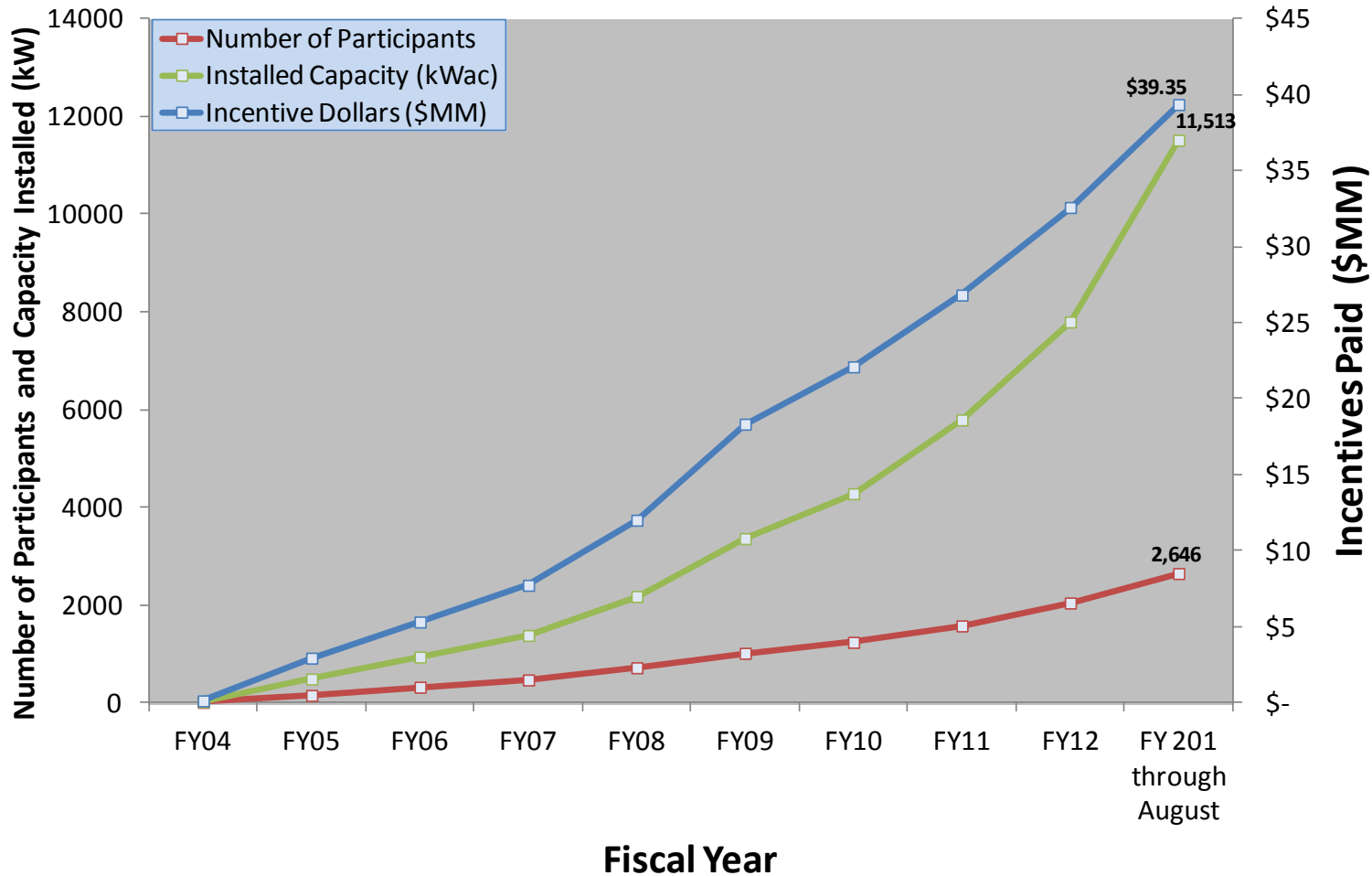
Managing Future Payments/Timing



Incentive Program Summary – Inception to Date (ITD) at [September, 2013]



Cummulative Installed Capacity, Number of Participants and Incentives Paid



1 MW Community Solar – Expanding Options for AE Customers



1 MWac	*Cost (\$/Wdc)	Total Cost (\$MM)	Capacity Factor (%)	MWH	# participants @ 6000 kwh/year
Fixed	\$2.85	\$3.70	14.8	1700	281
Single Axis	\$3.00	\$3.90	19.4	2200	368
Rooftop	\$2.70	\$3.51	14.8	1700	281

Economies of scale @ or above 5 MW

5 potential sites
RFP By Year End
Operational by Q1 2015

*Cost estimates do not include interconnection cost



Review of LSAC Strategic Plan for Local Solar



- Review of LSAC Report Highlights
- Austin Energy Analysis
- KEMA Preliminary Results

LSAC Scenarios- Capacity By 2020



200 MW

Current goal

200 MW solar

400 MW

Meet Demand Growth

100 MW customer,
behind the meter

100 MW local utility
owned/contracted

200 MW other utility
scale

600 MW

Plant Replacement

100 MW customer, behind
the meter

200 MW local utility
owned/contracted

300 MW other utility scale

LSAC Report- Committee Conclusions



200 MW

Current goal

- 2.8-3.3% of energy
- Business as usual

400 MW

Meet Demand Growth

- 5.2-6.0% of energy
- Economically feasible
- Technically feasible
- 2016 goal of 135-200 MW
- Recommended Goal

600 MW

Plant Replacement

- 8.0-9.2% of energy
- Not financially feasible
- Technically feasible

LSAC vs. Austin Energy Review



Areas of General Agreement

- Support solar investment
- Continue to increase solar options:
 - Financing (eg. PACE, Velocity Credit Union loans)
 - Community solar
- Need to define local element – and how it will be met
- Phase out of incentives
 - Rebate ramp down schedule
 - Reductions in PBI
- Integrate solar inspections with other electrical inspections
- Need for informed decisions, open dialogue
- Tax benefits lower after 2016
- Goals in concert with Gen Plan

Areas of Additional Analysis

- Market against which to measure economics (new gas vs. ERCOT)
- Market Requirements- report didn't reflect certain ERCOT conditions
- Timeframe for goal achievement
- Modeling to include lower tax benefits after 2016

Solar PV Scenarios: AE Analysis



2020 Scenario	MW					2020 Goal
	Local				Utility Scale	
	Residential	Commercial	Community	Total	Wholesale	
Existing 48 MW	9.9	8.1		18	30	
Current Goal (200 MW)	38	39	10	87	113	200
Inc. to 400 MW (LSAC Recommendation)	50	50	100	200	200	400
Inc. to 600 MW (LSAC Recommendation)	50	50	200	300	300	600

LSAC = Local Solar Advisory Committee

Presented to Emerging Technologies and Telecommunications Committee August 21, 2013

Solar PV Scenarios - Assumptions



- Case A

- Residential - current value of solar (VOS) of 12.8 cents/kWh for the future years; rebates decline over time
- Commercial - includes both PBI (energy) and cost not recovered by base rates due to net metering. The PBI declines over time
- Community Solar - based on recent Indicative offer of \$110 / MWh and declines by 5% each year.
- Wholesale - based on indicative offers of \$69 / MWh and declines by 5% each year.
- Assumes Production Tax Credit does not expire over the period

- Case B

- Residential - Same as Case A, but solar costs and rebates remain constant over time
- Commercial - Same as Case A, but solar costs and rebates remain constant over time
- Community Solar - based on wholesale offers adjusted for lower capacity factor and higher O & M costs.
- Wholesale - based on average of February 2013 renewable RFP offers for solar PV
- Assumes Production Tax Credit expires after 2016

➤ **Pre-Nodal**

- Austin Energy builds/buys to meet peak demand
- Austin Energy units dispatched to meet Austin Energy peak load and energy requirements

➤ **After Nodal** (December 2010)

- Austin Energy buys all power from the Market (regardless of source)
- Austin Energy Sells all Gen to the Market
- Austin Energy Gen no longer dispatched to Austin Energy Load
- No requirement to build or buy new resources
- New resource additions determined by economics and goals

Solar PV Cost/Benefit Approach

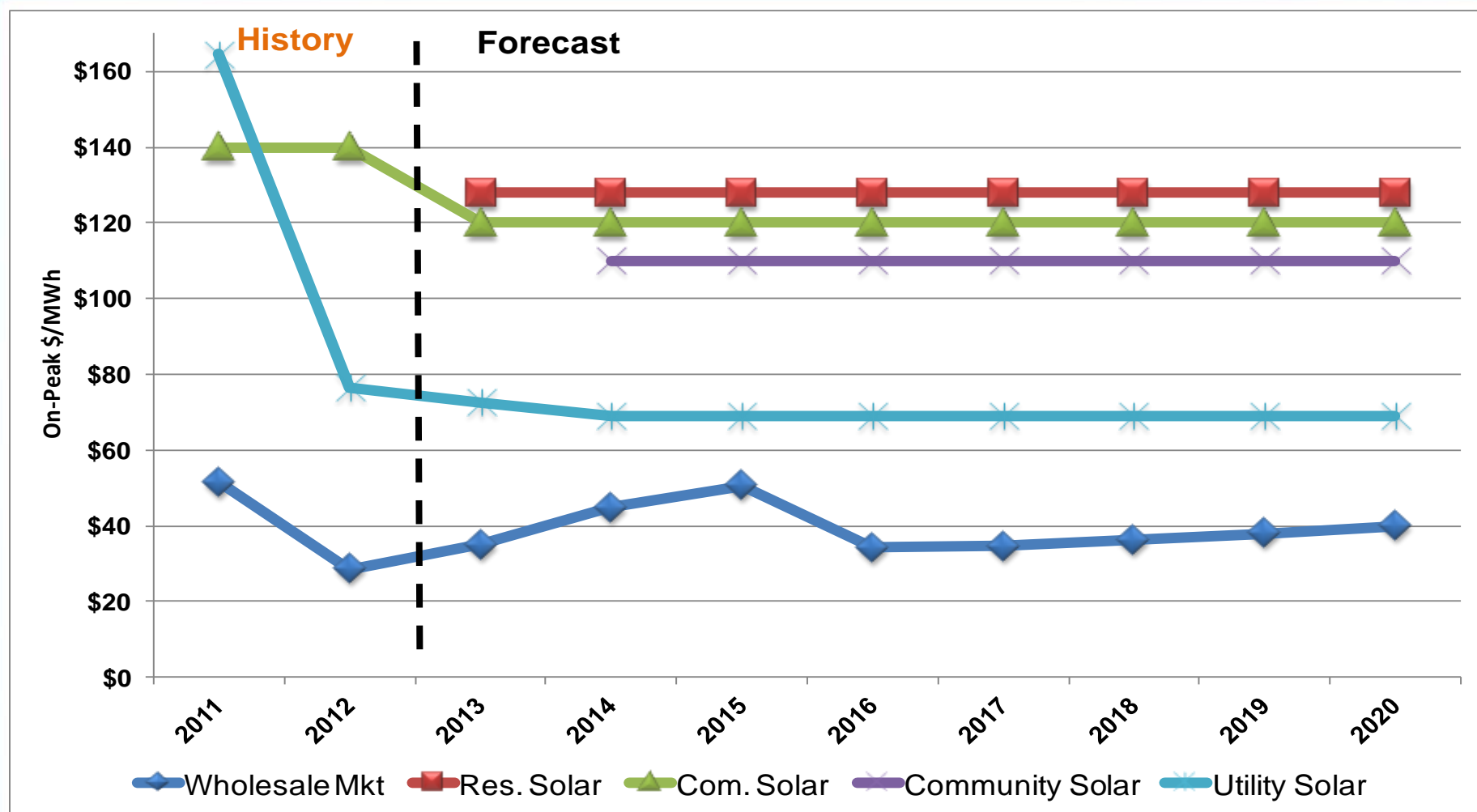


- Based on the expected annual cash flow for AE
 - Forecast period: 2014 to 2020
 - Outflows: Payments going out
 - Inflows: Revenue (i.e. reduced/avoided) costs coming in

- Outflows (i.e. cost)
 - Residential: Value of Solar (VOS) rate x kWh + rebate
 - Commercial: (PBI + average base rates) x kWh
 - Community PV: Purchased Power Agreement (PPA) x kWh
 - Utility PV: Purchased Power Agreement (PPA) x kWh

- Inflows (i.e. revenues/benefits/avoided costs)
 - Solar PV hourly output kWh x AE load zone hourly LMP
 - Community PV also includes
 - 2% ERCOT transmission losses
 - AE 4 CP transmission TCOS savings
 - Adjustments already accounted for VOS and net meter for Residential/Commercial

Current Costs vs. Market Prices



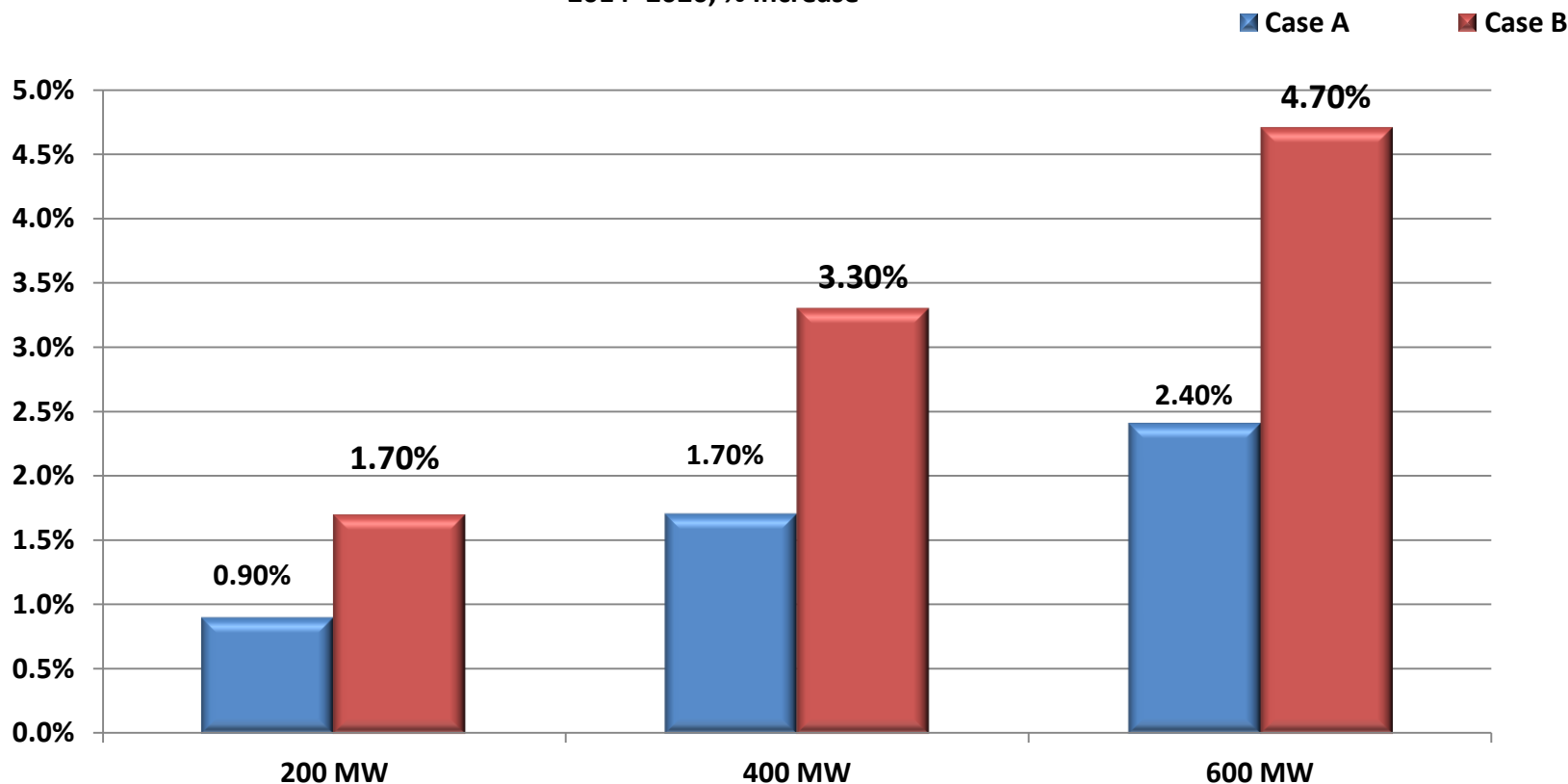
* Residential Value of Solar (VOS) Does Not Include Rebates

**Community and Wholesale Solar Indicative PPA Prices

Estimated Net Annual Impact to System Average Rates



Estimated Net Annual Impact to System Average Rates
2014- 2020, % Increase



Presented to Emerging Technologies and Telecommunications Committee August 21, 2013

Review of LSAC Strategic Plan



- KEMA hired to review assumptions and results
- Final report due October 1, 2013
- Scope-
 - Identify and evaluate cost assumptions used to develop the three scenarios
 - Evaluate feasibility of achieving penetration potential of each scenario
 - Evaluate affordability of each scenario from a utility and community perspective
 - Benchmark the 3 scenarios with the goals of other municipal utilities

Preliminary KEMA Report



	1 Business as Usual	2 Meet Demand Growth	3 Plant Replacement
Cost Assumptions			
Customer	Confirmed	Confirmed	Confirmed
Utility (local)	Confirmed	Uncertain	Uncertain
Other	N/A	Uncertain	Uncertain
Penetration Feasibility			
Customer	Feasible	Feasible	Feasible
Utility (local)	Feasible	Uncertain	Uncertain
Other	N/A	Feasible	Feasible

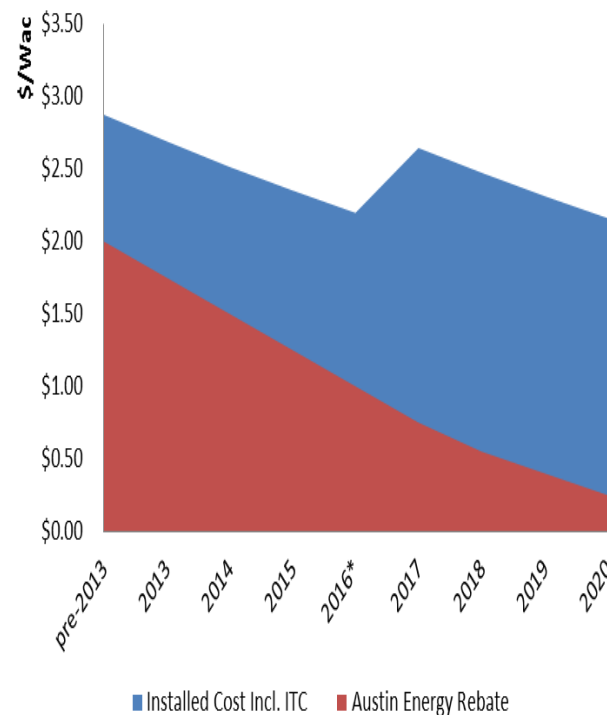
Confirmed	Uncertain
<ul style="list-style-type: none"> •Local solar resource potential •Projected decline of installed solar cost •Benefit of residential rebate phase-out •Benefit from commercial PBI and resulting solar project scale 	<ul style="list-style-type: none"> •Negative net cost of utility scale solar (local and other) •Unaccounted for administration and grid remediation cost •Unaccounted for ITC expiration

Next Steps- KEMA Analysis



More analysis being conducted on following-

- Finalize KEMA analysis
- Impact of diminished tax breaks in 2016 and beyond
 - Installed cost/solar contract cost of other utility
- Technical feasibility of local utility scale –
 - Inter-connection time-line risk
 - Size of systems
 - Risk of higher levels of penetration
- Application of cost of new gas generation to analysis of net solar cost vs. ERCOT market
- Benchmarking against other municipal utilities
 - Looking at San Antonio, Salt River Project, SDG&E, SMUD



Summary of Progress



- Presented to Emerging Technologies and Telecommunications Committee August 21, 2013
 - Electronic copies available upon request
- Met with LSAC September 5th & 13th , 2013
 - Solar objectives to be aligned with 2014 Generation Plan
 - Looking to examine incentives (rebates) and VOS holistically
 - Will develop ramp-down schedule for incentives
 - Market discussion with Energy Market Operations group
- Ongoing review by internal Austin Energy Solar Committee
- Ongoing discussion in RMC & EUC and during Gen Plan process

Gen Plan is updated every 2 years

- Due again next Fall
- Includes AE owned generation, PPAs, wholesale market
- 2% annual cap on rate increases (includes fuel)
- New resource additions determined by economics, goals, Council priorities
- Solar goals set within the context of overall Gen Plan
 - Including carbon reduction goals
- Will include public involvement
 - Will work through RMC & EUC
- Timeline to initiate Gen Plan process TBD

Value of Solar Evaluation



- Contract- Clean Power Research/Dr. Tom Hoff
- Scope
 - Used to update residential solar tariff
 - Develop residential and commercial PV incentive ramp down schedules
 - Assess/recommend updates to components
 - Break-even value of distributed solar energy to the utility
 - Economically neutral – cost of energy from market vs. customer
- Final results due to AE Oct. 1st

Objectives of VOS Evaluation



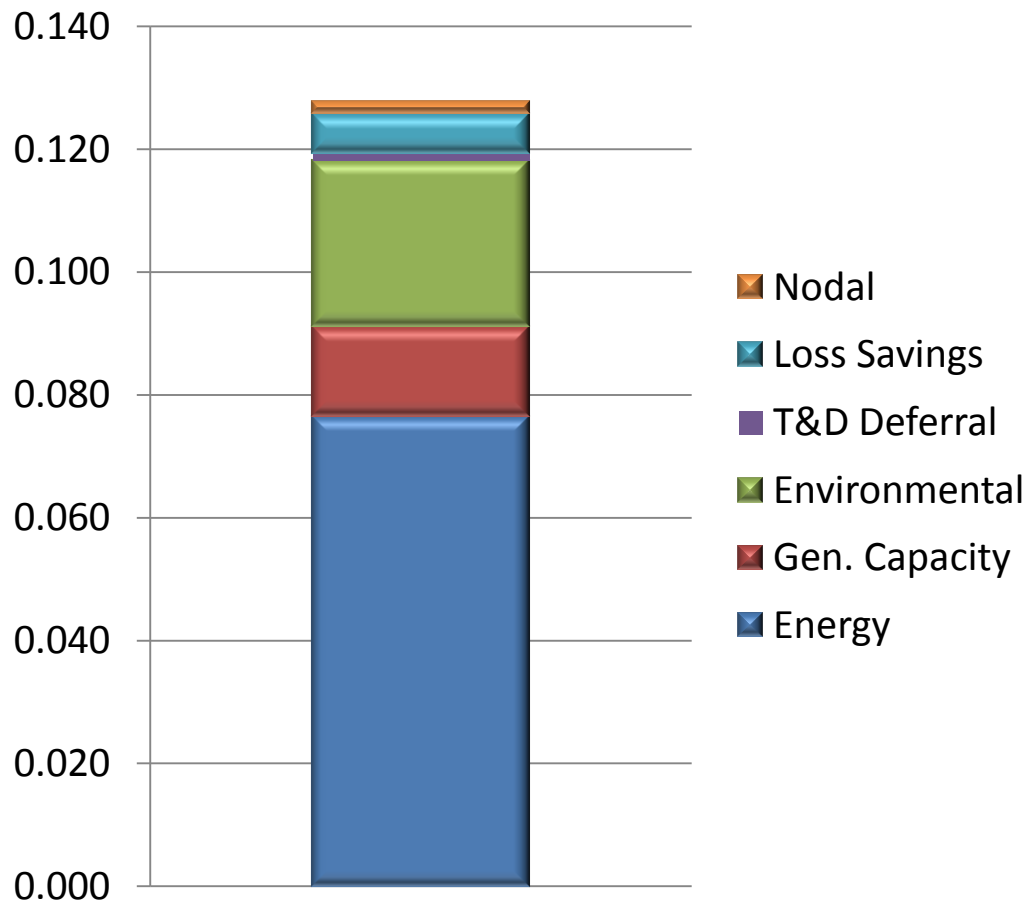
- Overcome limitations of net-metering approach
- Examine incentives (rebates) and VOS holistically
- Understand value of locally distributed solar to the utility
- Foundation for determining exchange rate for solar owners

Value of Solar credit will not be changed for fiscal 2014 –
Staff update resulted in 1 mil reduction

Current Austin Energy Value of Solar Components



The elements for the Value of Solar analysis remain the same



The current VOS is 12.8 Cents

- Integrate Nodal, Energy and Capacity components to accurately reflect ERCOT Nodal Market structure
- Historical hourly nodal prices (2012-2013)
- Obtain PV fleet production that is time-correlated with hourly nodal prices
 - PV system specs provided by Austin Energy
 - Solar resource data provided by SolarAnywhere
 - Fleet Simulation performed using SolarAnywhere FleetView
- Calculate weighted average solar value by multiplying PV fleet production by nodal prices
- Project future value

- In agreement on majority of elements
- Fuel Price Guarantee Value
 - Application in methodology as fuel hedge
 - Value, over what period
- Discount rate to apply
- Tweaking AE solar fleet capacity value/methodology
 - Difference may be due to AC/DC rating differential
 - Corrections in other assumptions – panel degradation
- Minor amendments to elements used in the proposed model to allow for consistency with ERCOT SOP's
- Working on ramp-down model for rebates

Next Steps



- Continued meetings with LSAC & AE Energy Market Operations group to discuss market implications
- Finalize KEMA Study
- Finalize VOS study/model
 - Develop AE methodology for application of model
- Status to Council Committee on Austin Energy Oct. 10
- Ongoing forum within RMC
- Integration of solar goals into 2014 Generation Plan
 - Transparent, ongoing public engagement

Thank you



Questions