Finding Pennsylvania's Solar Future

CLIMATE CHANGE ADVISORY COMMITTEE

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ROB ALTENBURG

PENNFUTURE

Goal

Exploring the pathways to increase Pennsylvania's in-state solar generation to 10% of sales by 2030.

The Project Team

- U.S. Department of Energy & Pennsylvania DEP
- PennFuture, VEIC, Dr. Jefferey Brownson (Penn State), Sharon Pillar, Maureen Mulligan, Ron Celentano
- 300+ Stakeholders Including:
  - Utilities
  - Solar Industry Professionals
  - Academics
  - Consumers
  - And many more.

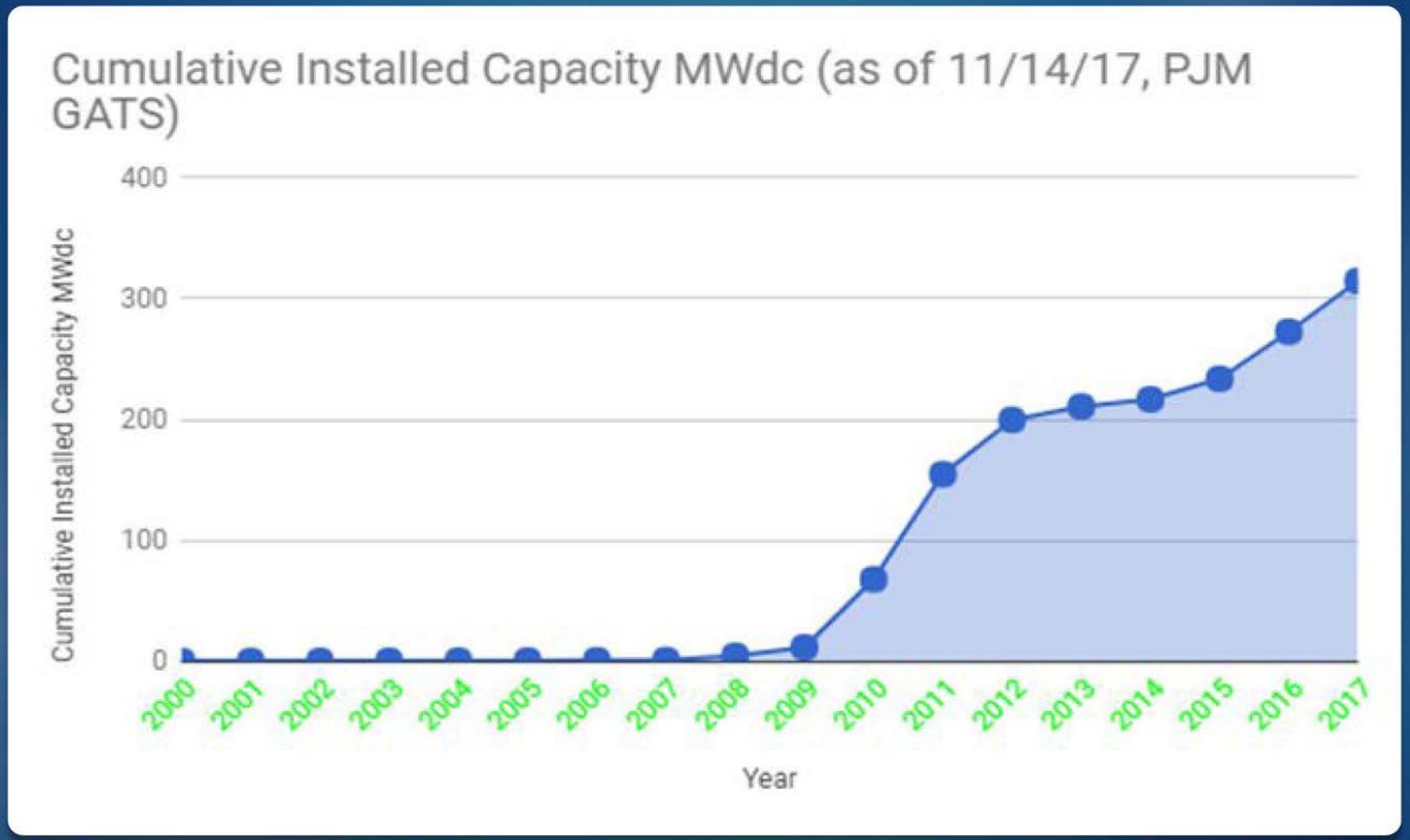
The Process

- 30-Month Stakeholder-based effort
- Currently Developing a draft plan:
  - Stakeholder review in March
  - Academic review in April
  - Available for public comment June.
- Next Steps:
  - Using the plan to inform policy discussions.

Why 10%?

Beyond business as usual

But, still achievable


Cumulative Installed Capacity MWdc (as of 11/14/17, PJM GATS)
Cumulative Installed Capacity MWdc
400
300
200
100
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

Comparison of SREC Targets

State	Year	Peak Solar Share
District of Columbia	2032	5%
New Jersey*	2027	4.10%
Delaware	2025	3.5%
Maryland	2020	2.5%
Illinois	2025	1.5%
Pennsylvania	2020	0.5%
Ohio	2027	0.5%
North Carolina	2022	0.2%

Modeling

	Reference Scenario	Solar A	Solar B
Overall Target	0.5% solar by 2020	10% in-state solar by 2030	10% in-state solar by 2030
Total Solar Capacity in 2030	1.2 GW	11 GW	11 GW
Distributed Capacity in 2030	0.6 GW	3.9 GW (35% of total) ½ residential and ½ commercial	1.1 GW (10% of total) ½ residential and ½ commercial
Grid Scale Capacity (>3MW) in 2030	0.6 GW	7.1 GW (65% of total)	9.9 GW (90% of total)
Alternative Energy Portfolio Standard (AEPS)	Assumes AEPS efficiency trends continue support beyond 2020	Assumes AEPS efficiency trends continue support beyond 2020	Assumes AEPS efficiency trends continue support beyond 2020
Federal ITC	Modeled as a reduction in installed costs. Phase out by 2023	Modeled as a reduction in installed costs. Phase out by 2023	Modeled as a reduction in installed costs. Phase out by 2023

Economics

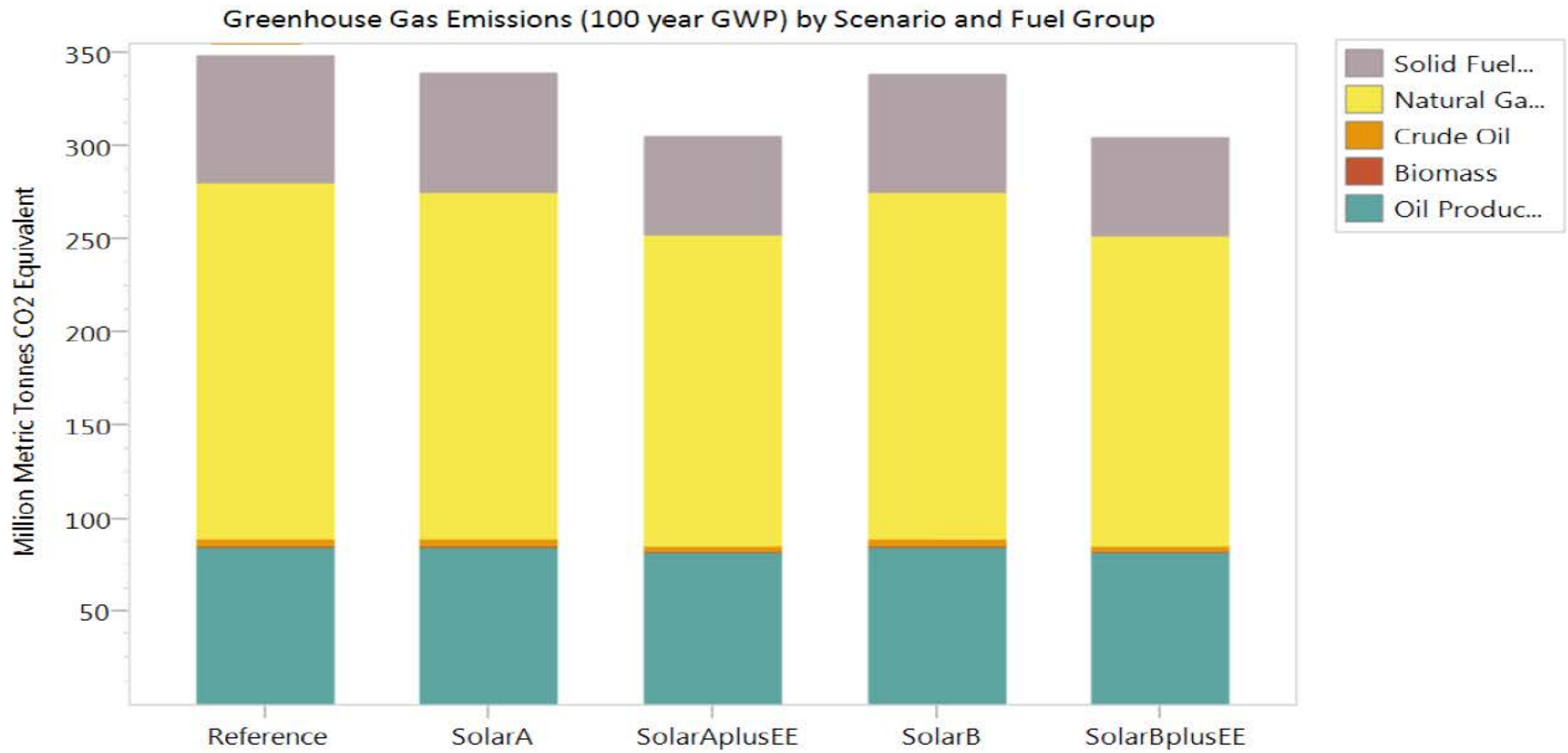
Costs

- $8.8 -- $10.3B
- 1.2% -- 2.4% higher than reference case

Benefits

- Reduces GHG 2% – 3% Economy-wide
- 100,000 Construction Jobs
- 1,000 on-going jobs

GHG Impacts


Greenhouse Gas Emissions (100 year GWP) by Scenario and Fuel Group
Million Metric Tonnes CO2 Equivalent
350
300
250
200
150
100
50
Reference
SolarA
SolarAplusEE
SolarB
SolarBplusEE
Solid Fuel...
Natural Ga...
Crude Oil
Biomass
Oil Produc...

Questions?