

Future of New York Commercial / Industrial & Community Distributed Generation Solar Markets

April 21, 2021

Technical Conference Day 1



Department
of Public Service

NYSERDA

Introduction

Presented by David Sandbank



Technical Conference State Representatives

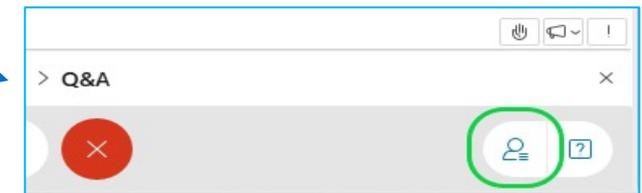
Department of Public Service	NYSERDA
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Warren Myers – <i>Director, Regulatory Economics</i>	Carl Mas – <i>Director, Energy and Environmental Analysis</i>
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Meeting Procedures

- > Participation for Members of the Public:
 - Members of the public will be muted upon entry.
 - Questions and comments may be submitted in writing through the Q&A feature at any time during the event. Questions will be answered at the end of the presentation.
- > If technical problems arise, please contact Karen.Fusco@nyserda.ny.gov



You'll see  when your microphone is muted



Agenda

1. Opening Remarks:

- Doreen M. Harris – President and CEO, NYSERDA
- John B. Howard – Chair, Public Service Commission

2. Focus & Scope

3. Commercial/Industrial & CDG Solar Market Progress 2014-2020

4. Project Economics & Use Cases

5. Benefits of Distributed Solar

6. Establishing a Value of Carbon

7. Options for Post-6 GW Commercial Industrial & CDG Project Support

8. Next Steps

9. Q&A

Opening Remarks

**Doreen M. Harris – President and
CEO, NYSERDA**

**John B. Howard – Chair, Public
Service Commission**



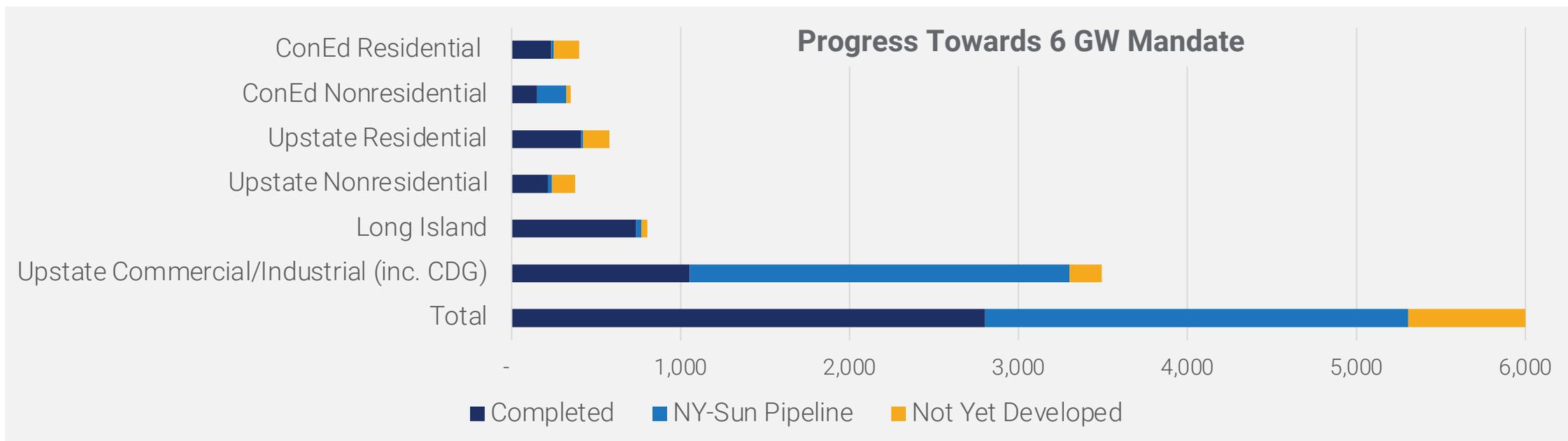
Focus & Scope

Presented by David Sandbank



Focus & Scope

- > This conference will focus on the distributed solar Commercial/Industrial & CDG markets **beyond the 6 GW NY-Sun target**
- > **We are well on track to achieve 6 GW of distributed PV on or before 2025 – no additional NYSERDA incentive funding is needed or requested**



Focus & Scope

Topics to Explore

- > Benefits of distributed solar: emission reductions (climate and health), jobs, grid benefits, customer bill saving, benefits to disadvantaged communities
- > Potential scale/scope of NYS's PV future. How will hosting capacity and transmission impact future development?
- > DEC guidance on value of carbon and potential effect on the E value
- > Role of distributed PV in the Clean Energy Standard's 70% renewables by 2030
- > How will the disadvantaged community requirements of the Climate Act be included in any potential outcomes?
- > Federal tailwinds & funding opportunities
- > What state initiatives must be considered for a measured and continued market?
- > Goals beyond 6GW with equitable cost allocation

Topics Outside the Scope of this Conference

- > Residential Onsite PV
- > Large-Scale PV (>5MW ac)
- > Non-PV technologies
- > Extension of Community Credit

Commercial / Industrial & CDG Solar Market Progress 2014-2020

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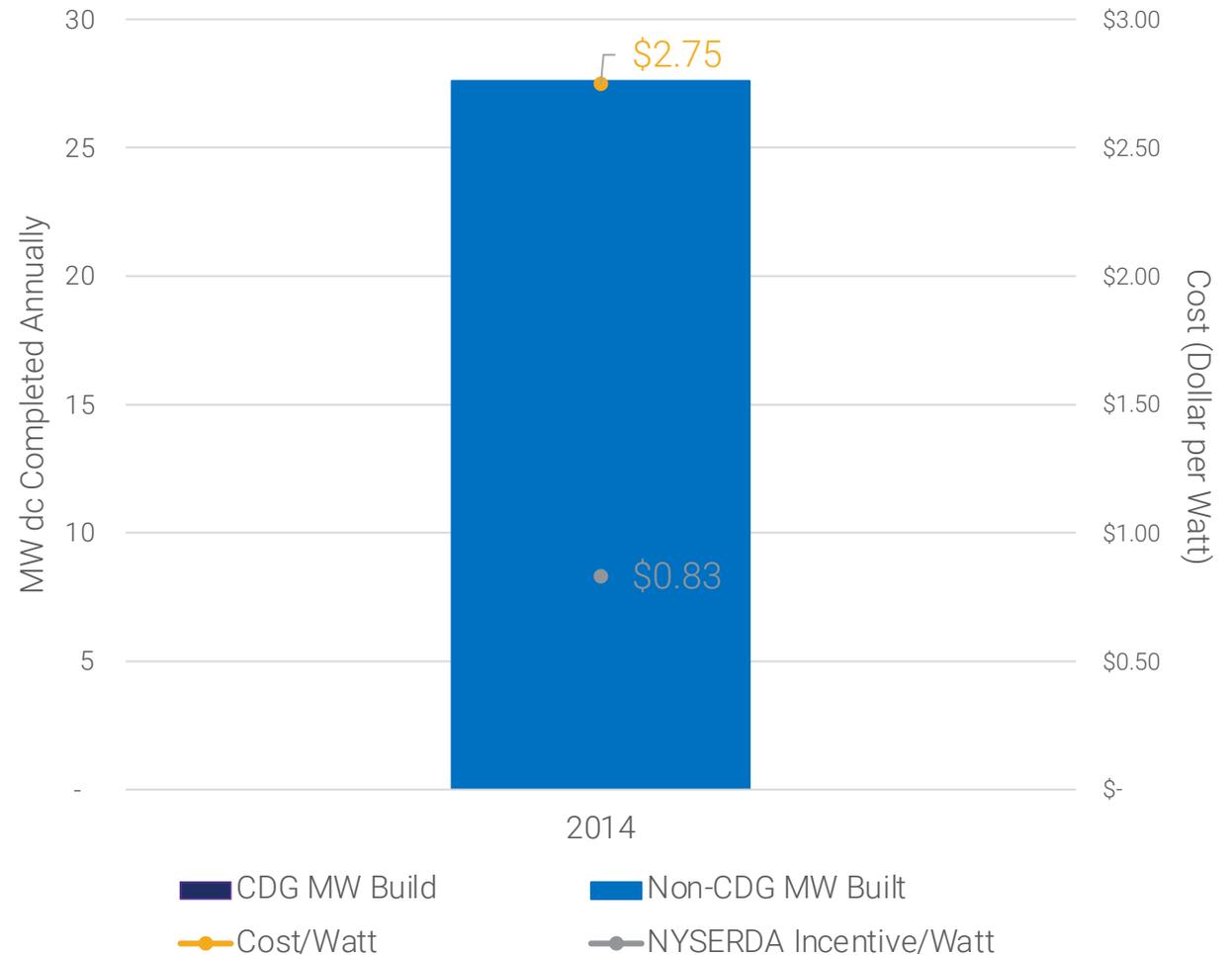


2014 Highlights

- > Launch of NY-Sun Initiative: 3 GW by 2023. Residential and non-residential blocks open
- > NY-Sun soft cost reduction work begins, gradually expanding to offer technical assistance and resources to consumers, developers, and municipal governments
- > Prior to NY-Sun, there were several competitive bid solicitations for Commercial/Industrial PV

#5
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive



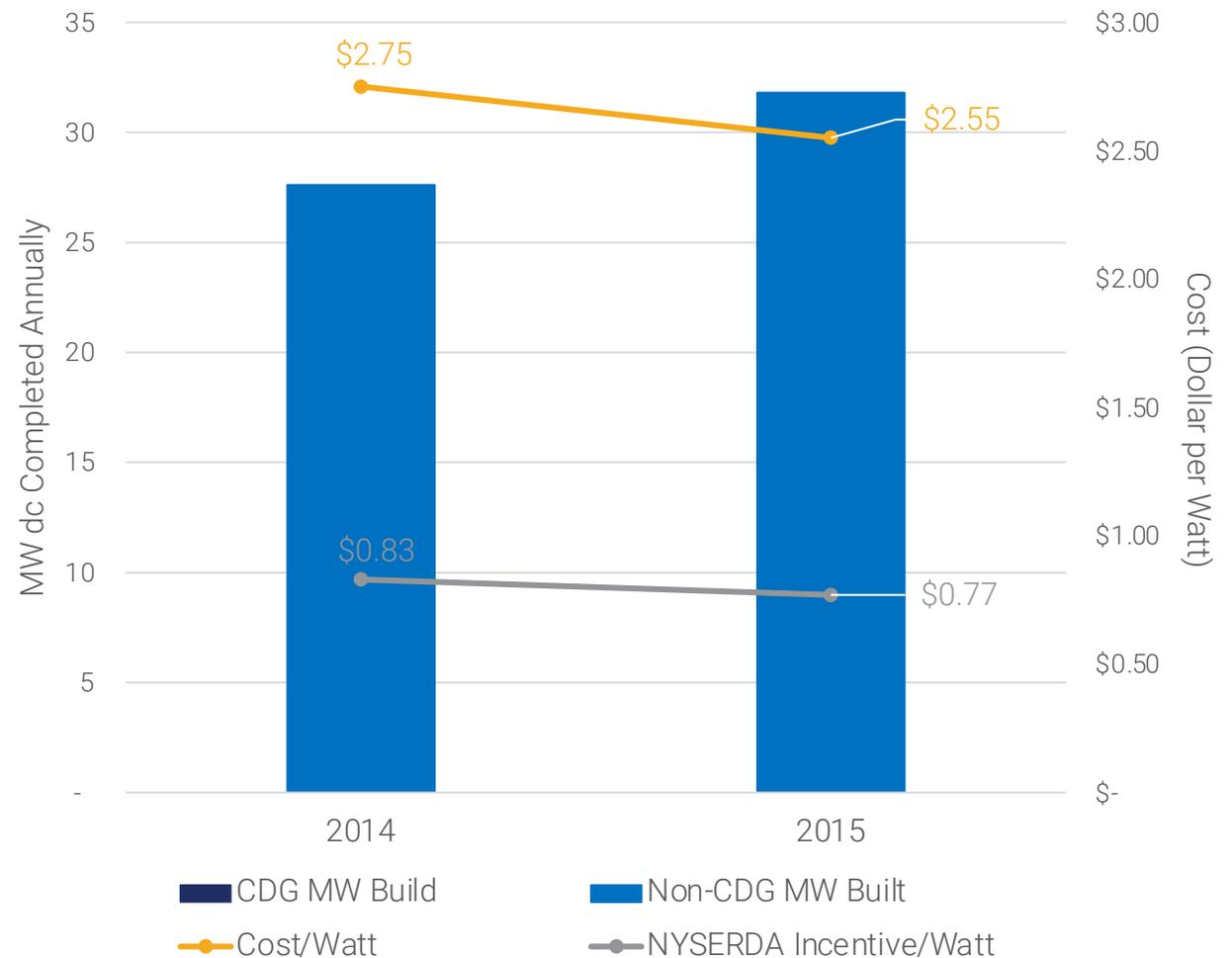
This and the following charts show NYSERDA incentive per Watt, NOT the federal tax credit, or tariff-based incentives (MTC or Community Credit).

2015 Highlights

- > NY-Sun launches Commercial/Industrial MW Block structure. Incentives are transparently and predictably structured in a declining block format
- > CDG Order makes community solar possible in NYS

#3
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive

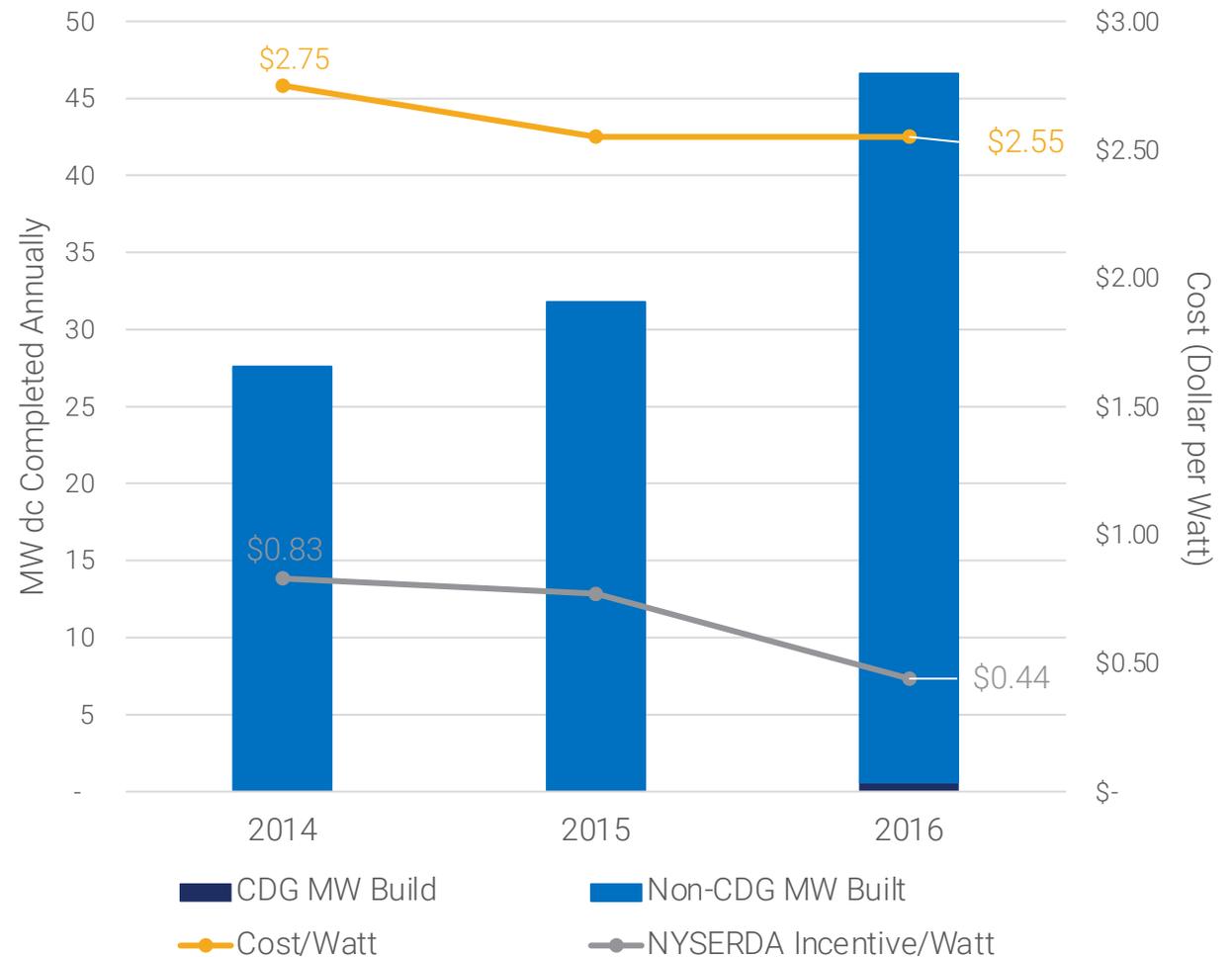


2016 Highlights

- > First two CDG projects completed in NYS
- > DPS, Utilities, and PV parties work together to design the Value of Distributed Energy Resource (VDER) tariff
- > Many projects on hold due to issues with interconnection queue management and awaiting launch of VDER

#4
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive

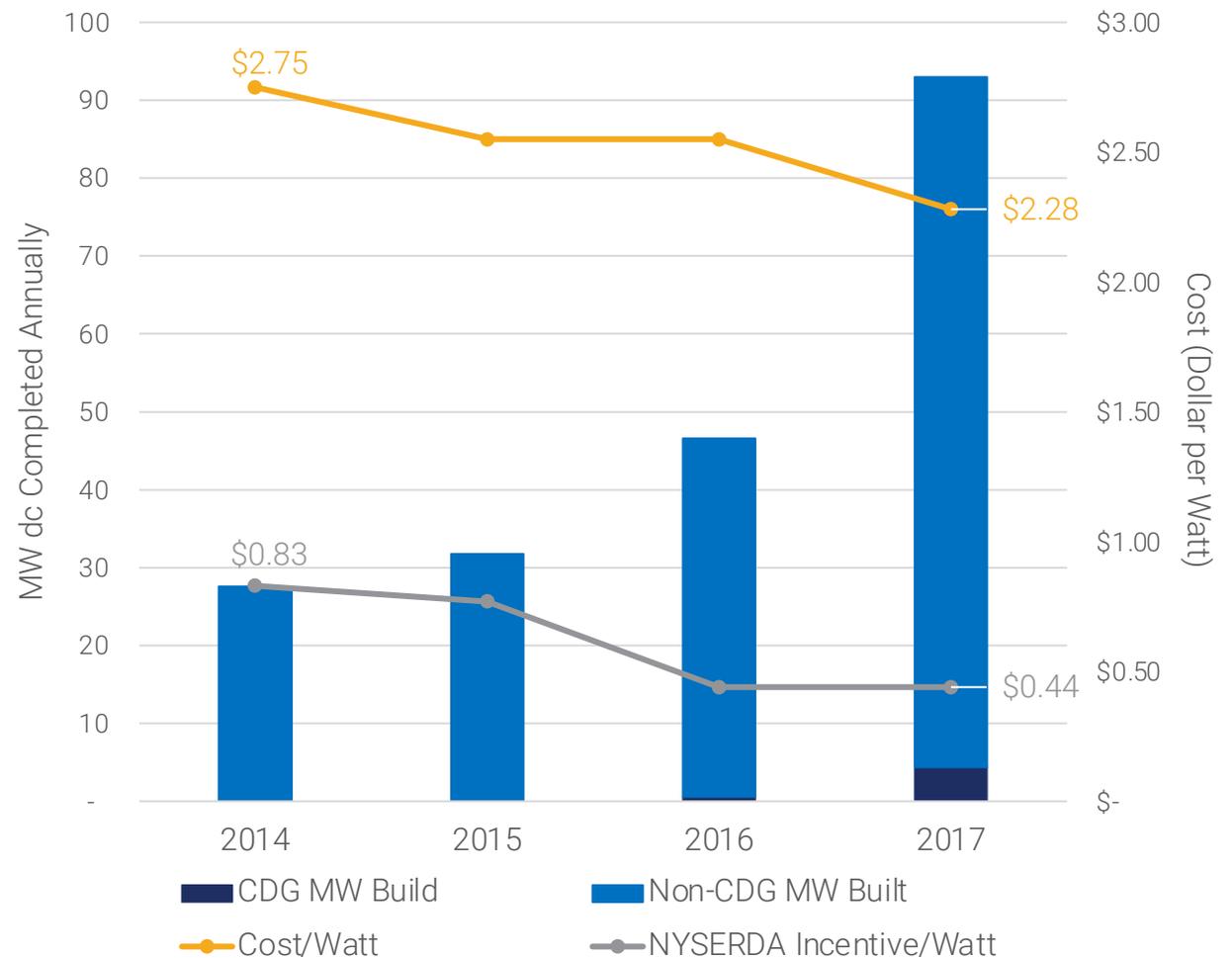


2017 Highlights

- > After years of development and collaboration, VDER is adopted. It's one of America's first time and location-sensitive distributed generation tariffs.
- > Queue Management Order addresses gridlock with the interconnection process, paves the way for future development.
- > First edition of the New York State Solar Guidebook for Local Governments.
- > NYSERDA releases PILOT calculator to help standardize and drive down soft costs

#4
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive

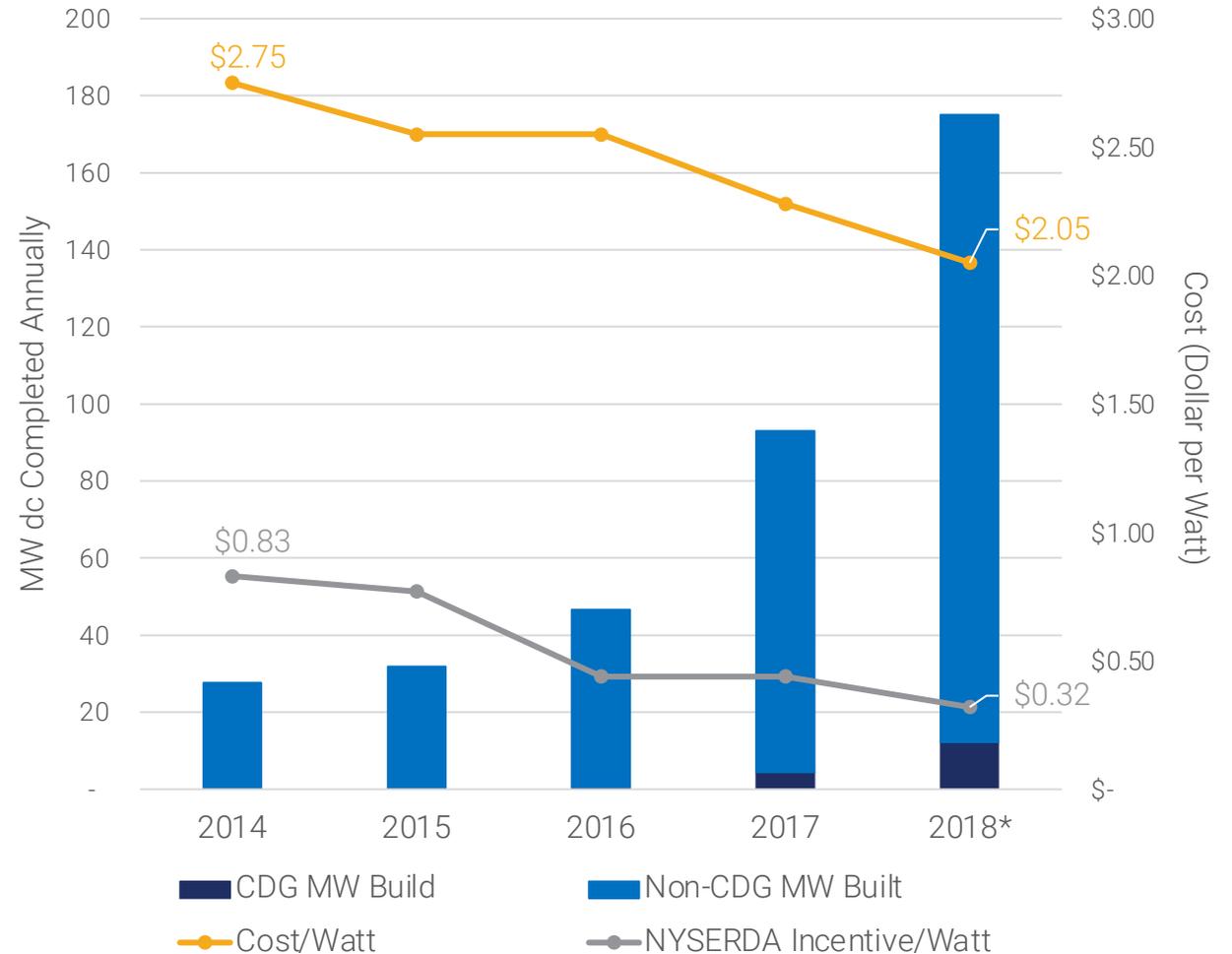


2018 Highlights

- > NYSERDA redesigns the NY-Sun MW Block structure introducing incentive adders for brownfields, landfills, & affordable housing. Rooftop and parking canopy adders in ConEd
- > Maximum project size increases from 2MWac to 5MWac, bringing economy-of-scale cost savings
- > First two community solar projects completed in New York City

#2
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive



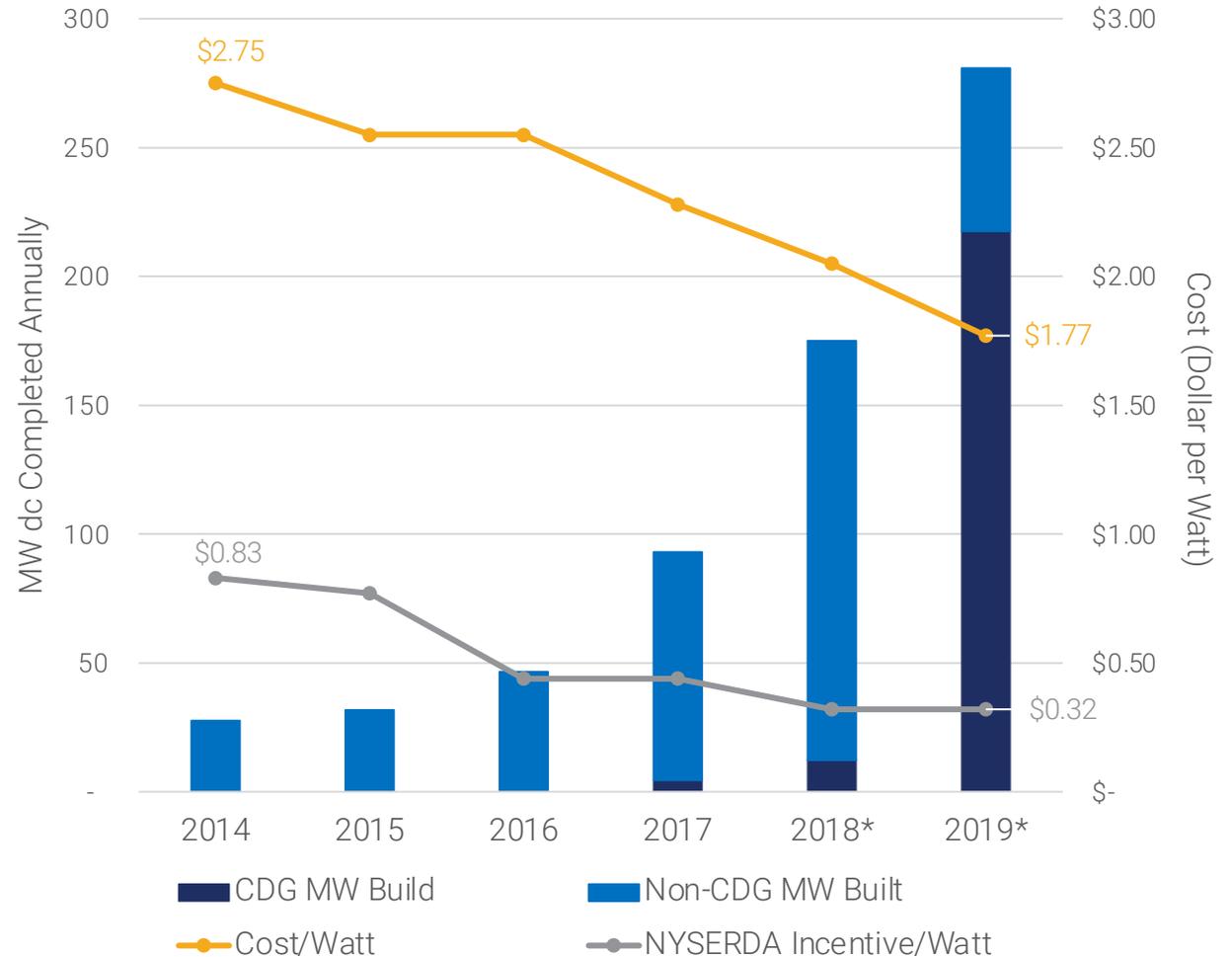
*Note that 2018-2020 completions included new incentive adders for brownfield/landfill projects and those in strategic grid locations.

2019 Highlights

- > NYSERDA launches retail energy storage program, spurring PV + Storage development
- > VDER improvements adds predictability and financeability
- > Community Credit supports a new wave of community solar development
- > The Consolidated Billing Order sets net crediting in motion, driving down customer management costs for future projects
- > The Climate Act sets ambitious targets for NYS, including 6GW of distributed PV by 2025

#2
annual
non-res PV
completions

Annual C/I MW Installed, Cost, and Incentive



*Note that 2018-2020 completions included new incentive adders for brownfield/landfill projects and those in strategic grid locations.

2020 Highlights

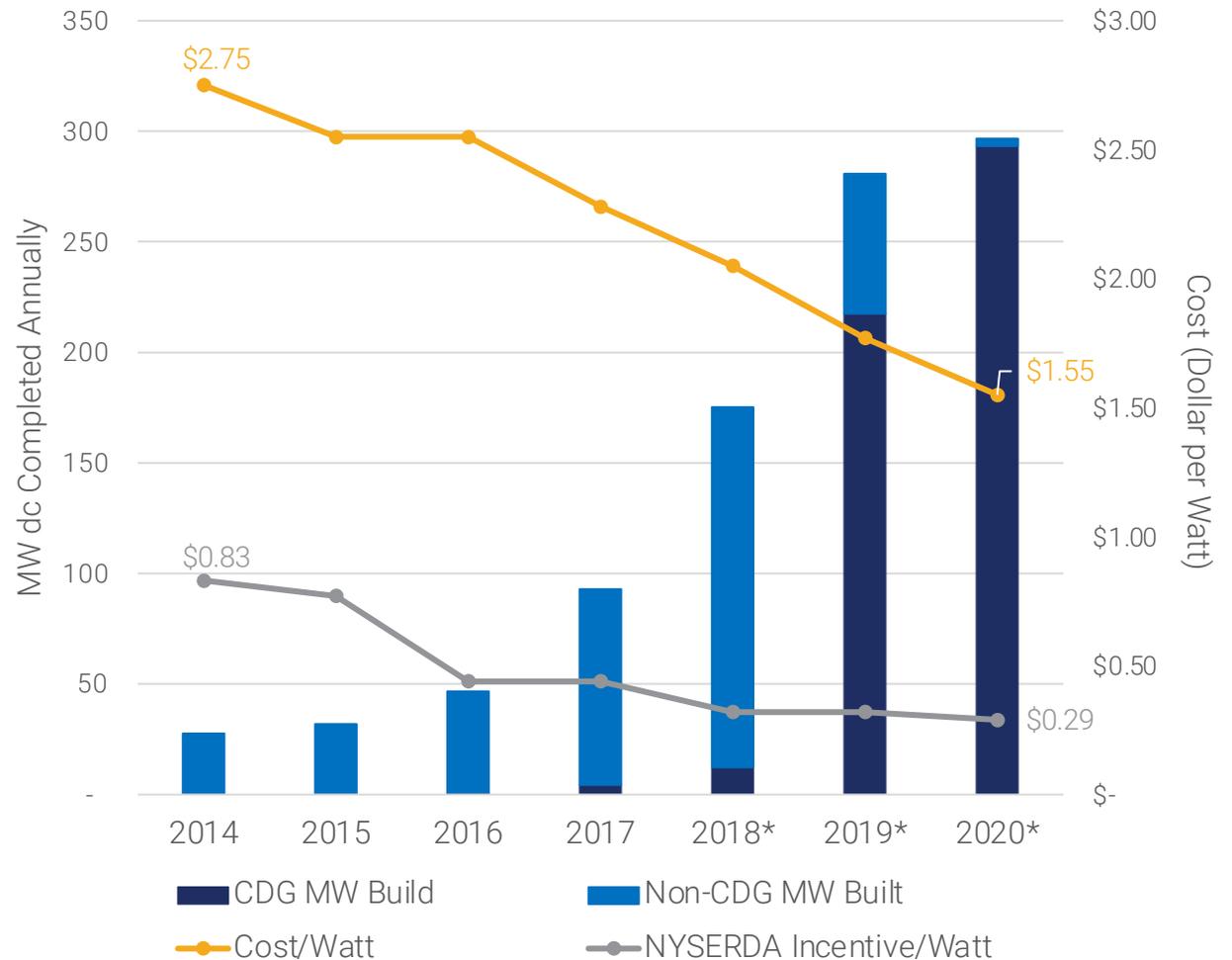
- > Community Adder launches for National Grid, NYSEG, RG&E; Upfront NYSERDA incentive rather than per-kWh tariff-based incentive
- > Community Choice Aggregation (CCA) opt-out provides another path to lower customer acquisition/management costs
- > NY-Sun expands with a mandate of 6 GW by 2025
 - 1,810 MWdc of new capacity is added to the C/I MW Block structure
 - \$135m for benefits for LMI households and disadvantaged communities
- > COVID-19 rocks the industry, and construction is halted entirely for several months; NYS rebounds with the record completion numbers for 2020
- > 2020 CES Order lays pathway for achieving Climate Act mandates – 70 by 30

#2
annual
non-res PV
completions

#1
annual CDG
completions

#2
cumulative CDG
completions

Annual C/I MW Installed, Cost, and Incentive

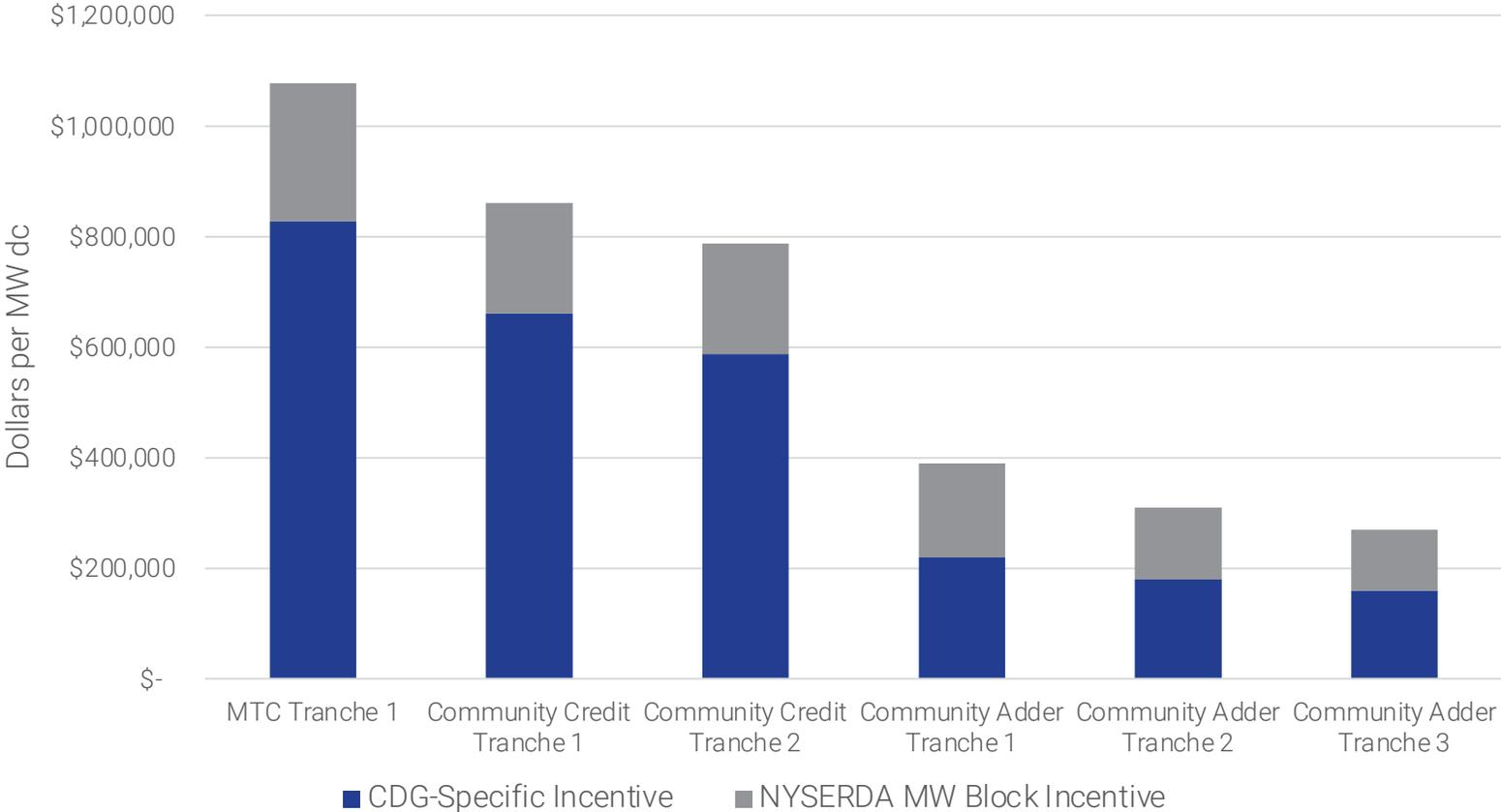


*Note that 2018-2020 completions included new incentive adders for brownfield/landfill projects and those in strategic grid locations.

Decline of Community Solar Incentives

- > State/ratepayer support for CDG projects has dropped by **75%** from 2017 (MTC) to 2021 (the final Community Adder tranche)
- > Chart shows total support for CDG project including **NY-Sun MW Block incentive and MTC/Community Credit/Community Adder**

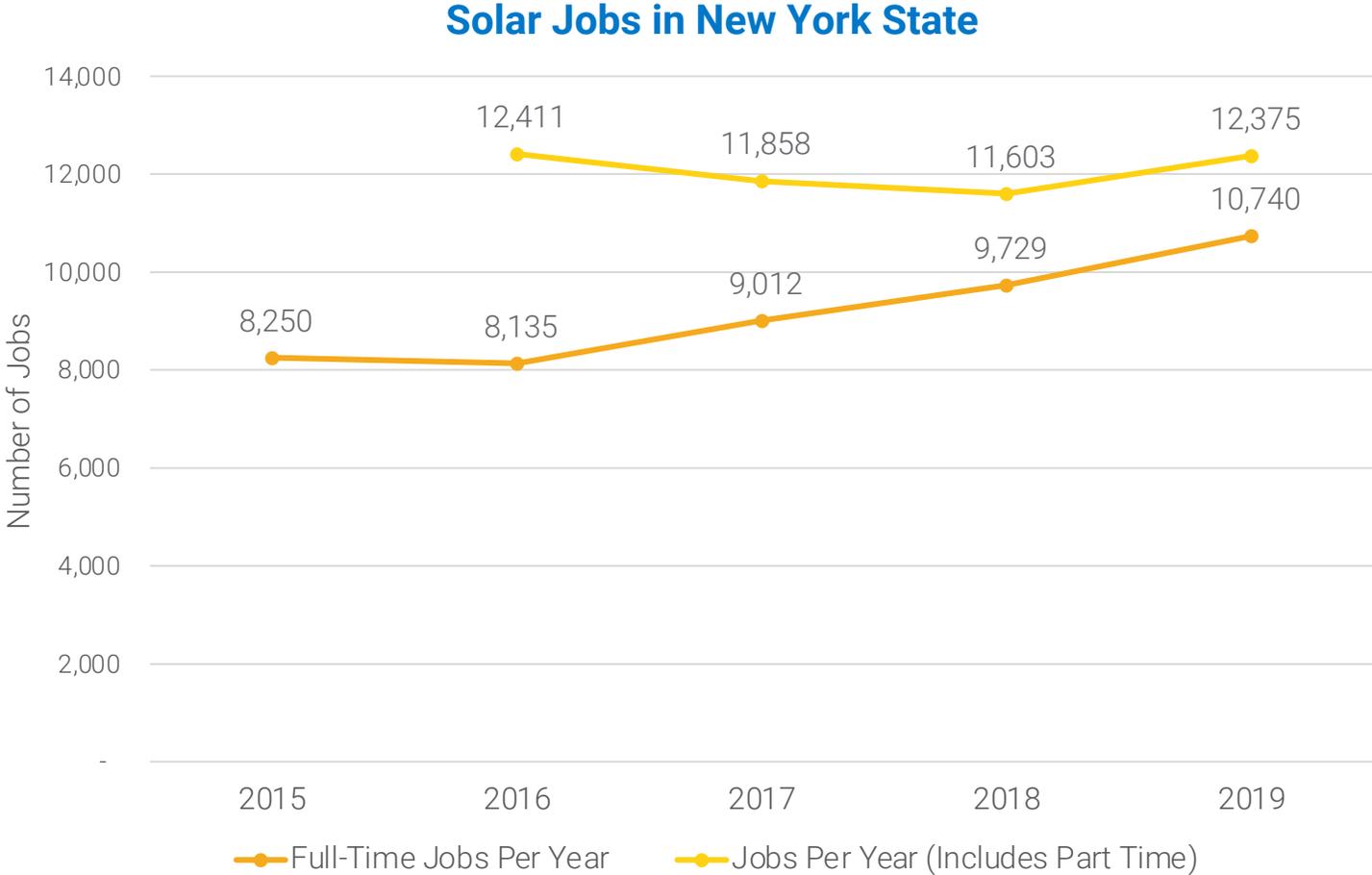
Total Support for National Grid CDG Projects by Tranche



Note: the tax credit and Environmental value are not shown in the chart.

New York State Solar Jobs

- > The number of full-time PV jobs has grown steadily, fueled by increasing MW deployment
- > Full-time jobs from National Solar Jobs Census annual report
- > All-inclusive jobs numbers from NYSERDA New York Clean Energy Industry Report



Project Economics & Use Cases

Presented by Luke Forster



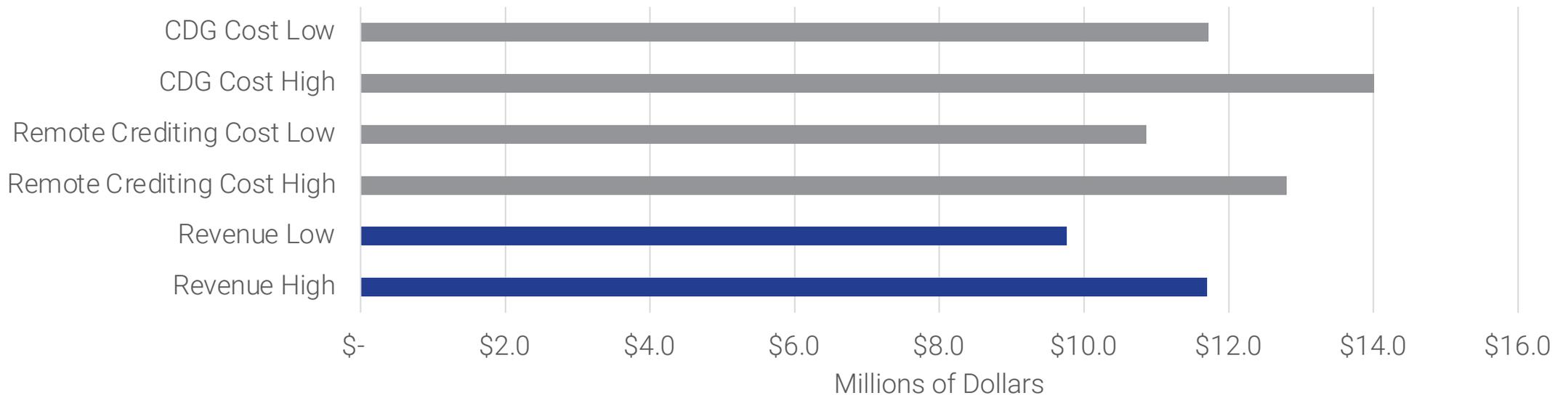
Project Financial Overview

Characteristics of most recently-developed projects:

- > Generally **4-5 MWac** project size, sometimes co-located
- > **Bifacial modules**, on single-axis tracker racking when site conditions allow
- > **National Grid** and **NYSEG** territories
- > Community solar
 - Most projects have the Community Credit or Community Adder incentives
- > Projects are beginning to **pivot towards Remote Crediting** now that Community Credit and Community Adder incentives are fully allocated
 - Flexibility with residential off-taker requirements allows for lower customer acquisition/management costs

Costs vs. Revenue of a typical CDG project

Revenue vs. Cost for Sample 5 MWac National Grid/NYSEG Project



- > High and Low revenue forecasts shown – Low is 3-year historic LBMP/Capacity with 2% growth; High is NYISO/CARIS LBMP forecast (zones A-F) and DPS BCA ICAP forecast
- > Revenue includes 26% ITC, **No NY-Sun incentive**, and NPV of Value Stack minus 10% customer savings; Makes no assumption about potential future federal funding; Cost savings from net crediting are included
- > Delta between Revenue and Costs is developer profit/loss

Benefits of Distributed Solar

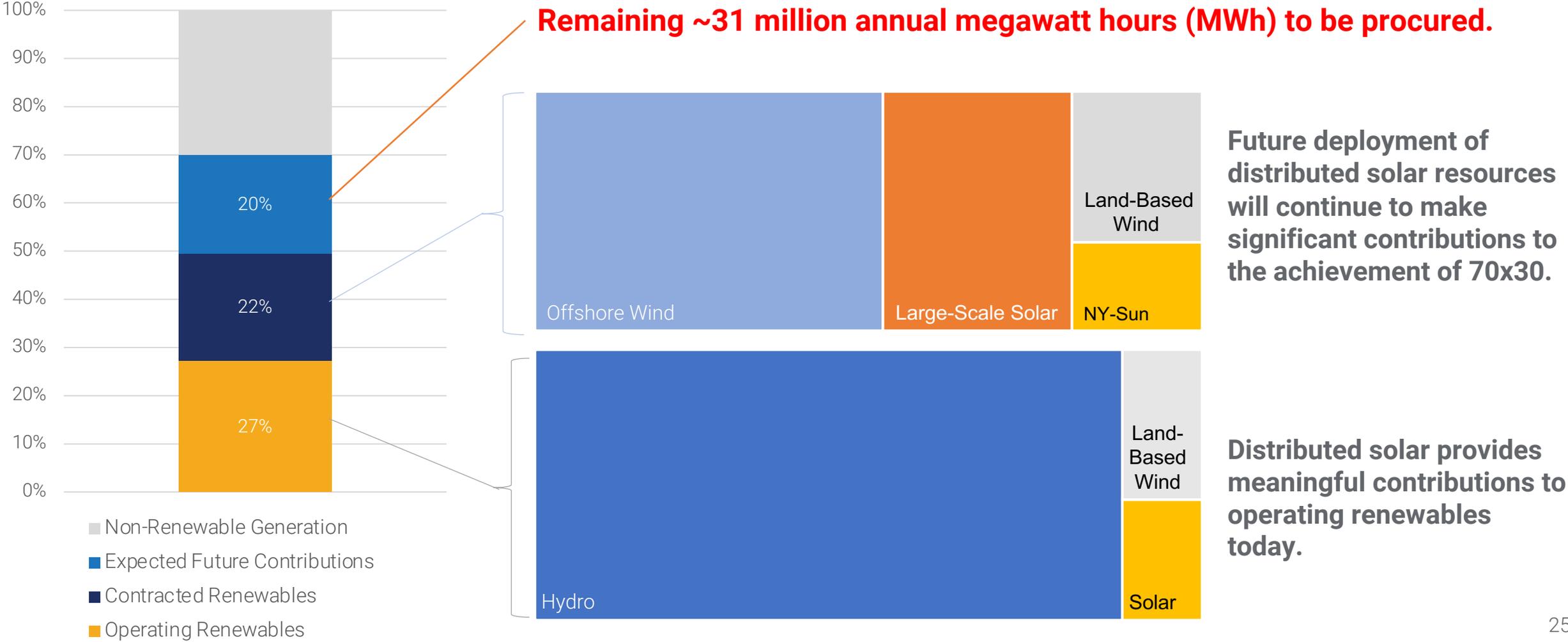
Presented by Carl Mas



Distributed Solar Benefits

- > Contributes to the Climate Act's goals of reaching **70%** renewable electric grid by **2030**
 - Displaces combustion of fossil fuels - reducing greenhouse gas emissions and improving air quality
- > Allows for greater access to clean energy for all New Yorkers
 - Community solar has the potential to serve thousands of low-income households
- > **12,000+** New York State Solar Jobs
 - Largest percent of renewable energy jobs in State
- > Adds resource and geographic diversity to New York's renewable energy portfolio
 - Puts clean energy generation in the ground now (nearly all solar built in the state thus far is from distributed solar)
 - Smaller projects are easier to site and offer community benefits
- > Locates zero-emission electric generation closer to load where larger projects would be challenged
 - Provides local capacity value
- > Continuation of successful cost reduction trajectory will expand market adoption without incentive

Progress to 70% Renewable by 2030



Establishing a Value of Carbon

Presented by Carl Mas



Establishing a Value of Carbon

Guidelines For Use By State Agencies

The Climate Act directed the Department of Environmental Conservation to consider two approaches for establishing a value of carbon

- > The first approach is based on the **monetary cost of damages** that would result from an incremental increase in emissions as a result of climate change, commonly referred to as the **social cost of carbon (SCC)**
- > The second approach, the **marginal abatement cost (MAC)**, establishes a value of carbon with reference to a specific emissions reduction goal
 - In other words, what would be the cost to reduce the last ton of emissions by the amount needed to meet a particular emissions target



Establishing a Value of Carbon

Guidelines For Use By State Agencies

Continued

- > Whereas the **damages approach** is intended to establish a value of carbon for all sectors, **marginal abatement costs** are typically estimated with regard to sector-specific technologies, markets, and emission reduction goals
 - The marginal abatement approach requires an analysis of the relevant economic sector of interest, and could result in multiple values of carbon that differ between sectors
 - In New York State today, the **electric power sector is best positioned to apply marginal abatement approaches**, due to available cost information and its history of effective emissions reductions policies



Options for Post 6 GW Commercial / Industrial & CDG Solar Support

Presented by Carl Mas



Potential Commercial Industrial / CDG Policy Options

- > Consider Pricing of Externalities: Monetary Cost of Damages vs Marginal Abatement Cost
 - **Monetary Cost of Damages** – A damaged-based approach where an administratively set externality value is equal to the Social Cost of Carbon
 - **Marginal Abatement Cost** – A price that society would need to pay to achieve a specific distributed solar goal
 - **How to set the price?** Price could be discovered through a competitive market approach or set through an administrative process
 - A. Market approach:** Regular competitive solicitations, potentially integrated into the CES Program
 - B. Administrative approach:** based on modeling of supply curve (price vs quantity) that analyzes future project economics
- > **Pursuant to the DEC Guidelines, explore the Marginal Abatement Cost approach in more detail**

Marginal Abatement Cost

A. Market Approach:

Externality value (and therefore the incentive) priced through competitive market discovery

> Program design considerations

- NYSERDA or utility procurements?
- How do we maintain Value Stack signals (time and location)?
- What contract type – fixed or index?
- Regularity of solicitations?
- Sub-segmentation of technologies and regions?
- Tenor of contracts?

> Advantages

- Keeps costs down through competitive pressure, protecting ratepayers
- Adaptive to market changes

> Challenges

- Developer uncertainty
- Higher complexity for administer and developers

Marginal Abatement Cost

B. Administrative Approach:

Administratively set externality value (and therefore the incentive) based on estimates of project economics

- > Continuation of administratively set value, now based on Marginal Abatement Cost, to achieve distributed solar goal
 - We would need to arrive at a new deployment goal and analyze the corresponding project economics
 - In addition, need to determine if value should vary by project type or location
- > **Advantages**
 - Less complexity and more certainty for developers
 - Rolling program allows for projects to advance without the timelines of a solicitation
- > **Challenges**
 - Uncertainty in estimating project economics, which vary over time – ie. a set value does not adapt to exogenous changes

Next Steps

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Next Steps

- > This presentation will be posted to [DPS Case 15-E-0751](#) (VDER)
- > Comments on today's presentation can be informally filed [to the Case](#) up until **May 7th**
- > Technical Conference #2 will be virtually held on **May 7th**
- > Staff will release a Technical Conferences Proceedings document after the second conference (targeting end of May)
- > Staff will release a Formal White Paper for SAPA comments (Summer)

Q&A

Please use the Q&A function in WebEx to ask questions.

