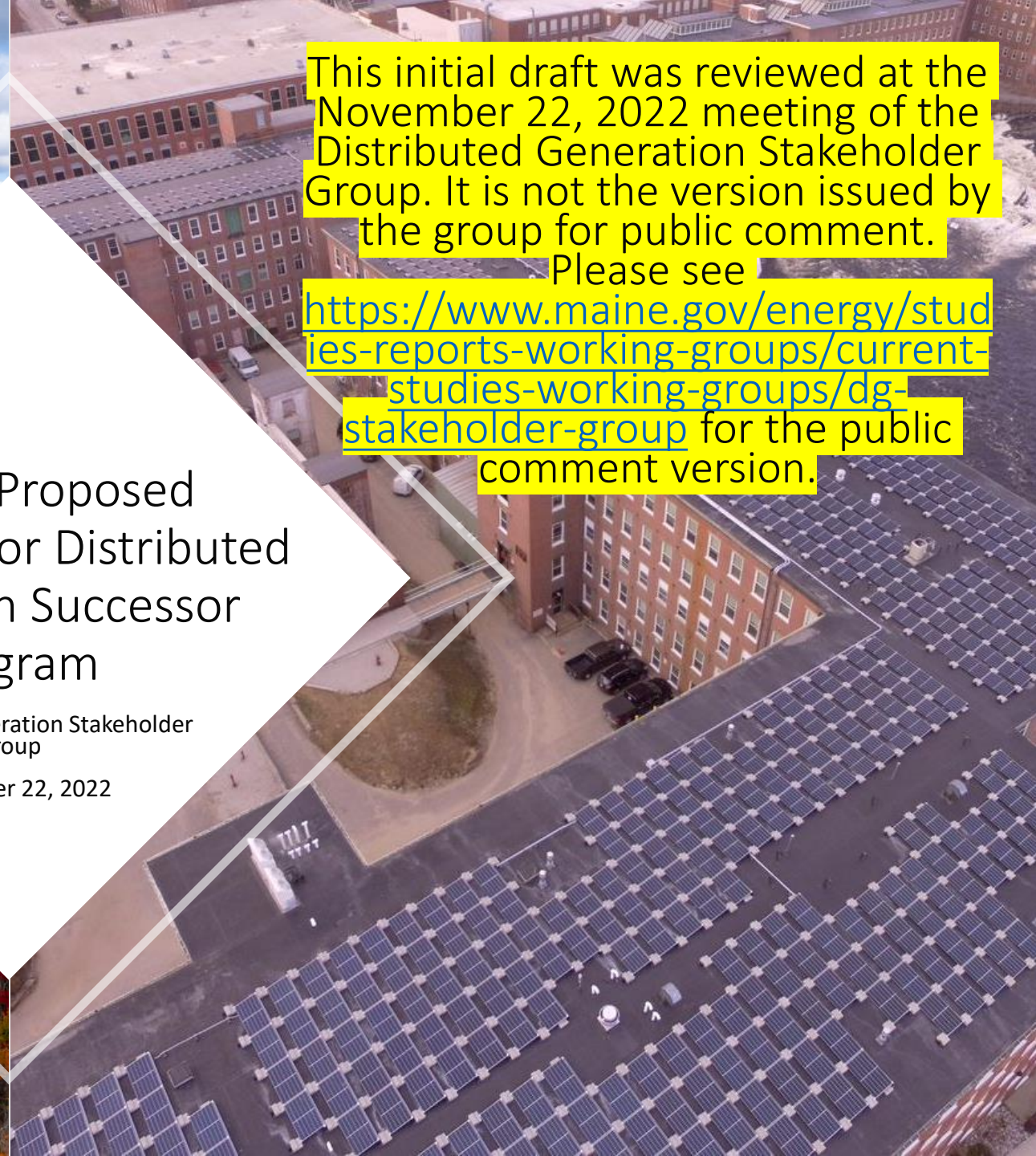

This initial draft was reviewed at the November 22, 2022 meeting of the Distributed Generation Stakeholder Group. It is not the version issued by the group for public comment. Please see https://www.maine.gov/energy/studies-reports-working-groups/current-studies-working-groups/dg-stakeholder-group for the public comment version.

LD 936 Proposed Framework for Distributed Generation Successor Program

Distributed Generation Stakeholder Group

November 22, 2022

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All figures are drawn from the source discussed and linked on the same page.

Photo credits

- Cover, left: Standard Solar. Distributed solar project in Bethel, Maine.
- Cover, right: ReVision Energy. Distributed solar project on Pepperell Mill, Biddeford, Maine.

Terms and acronyms

When used in this document, the following terms and acronyms have the following meanings:

Term/acronym	Meaning
DACF	Maine Department of Agriculture, Conservation and Forestry
DEP	Maine Department of Environmental Protection
DG	Distributed Generation – see slide 9
GEO	Governor's Energy Office
IRA	Inflation Reduction Act of 2022
LD 936	Public Law 2021, Chapter 390 which establishes and directs the purpose of the Distributed Generation Stakeholder Group
LBNL	Lawrence Berkeley National Laboratory
LMI	Low- and moderate-income

Term/acronym	Meaning
Mid-size resources	Distributed generation resources with nameplate capacity of 1 megawatt to 5 megawatts
NEB	Net energy billing
NREL	National Renewable Energy Laboratory
Offtaker	The purchaser or receiver of energy, bill credits, or other benefits associated with the production of energy from a distributed generation project
PV	Photovoltaic

Executive Summary

About this document

- Pursuant to legislation, the Governor's Energy Office (GEO) convened the Distributed Generation Stakeholder Group to advise and assist in the preparation of a successor program for applicable distributed generation in Maine.
- This proposed framework is the product of eighteen public stakeholder meetings and work sessions, technical analysis, and input from stakeholders and the public.
- **Interested parties and members of the public are invited to submit comments on this proposed framework.** All comments will be considered when preparing a final report to be submitted to the Legislature at the end of 2022.
- To submit your feedback, use this form: [link to Form]
- **All comments must be submitted by 11:59 p.m. on December 14, 2022**

How this proposal was developed

- This proposal is the product of stakeholder consultations and expert analysis, and incorporates elements of input from all
  - Ultimately it does not represent the entire preference of any single stakeholder, including the GEO
  - This proposed framework will be revised in response to public feedback as well as continued feedback from the Distributed Generation Stakeholder Group
  - GEO appreciates the input and perspective of all stakeholder group members in preparing this proposed framework pursuant to LD 936

This program is designed to:

- **Build low-cost renewable energy** to save Maine people money and continue growing our clean energy economy
- **Ensure opportunities** for competitive cost-effective distributed renewable energy and storage are captured to **benefit Maine ratepayers**
- Maximize the opportunity to **direct federal financial incentives** to continue deploying cost-effective community-scale renewable energy that delivers tangible benefits to Maine communities
- Deploy the incremental benefits of community-scale renewable energy to **reduce energy burdens** faced by low- and moderate-income households
- **Align** community-scale renewable energy deployment with **siting incentives funded by the federal government**, directing future development to previously disturbed sites including brownfields to minimize impacts

Background – state policy objectives

Definition of Distributed Generation

- 35-A M.R.S. §3481 defines a "distributed generation resource" as "an electric generating facility with a nameplate capacity of less than 5 megawatts that uses a renewable fuel or technology under section 3210, subsection 2, paragraph B-3 and is located in the service territory of a transmission and distribution utility in the State."
- Public Law 2021, Chapter 390 section 4 states "For the purposes of this section [pertaining to the Distributed Generation Stakeholder Group], 'distributed generation project' means a renewable energy project with a nameplate capacity of no more than 5 megawatts that has identified residential, commercial and institutional customers and includes, but is not limited to, net energy billing arrangement projects."
- For the purpose of this straw proposal, the Distributed Generation Stakeholder Group considers **applicable distributed generation** to mean a distributed generation resource between one and five megawatts.

State policy goals

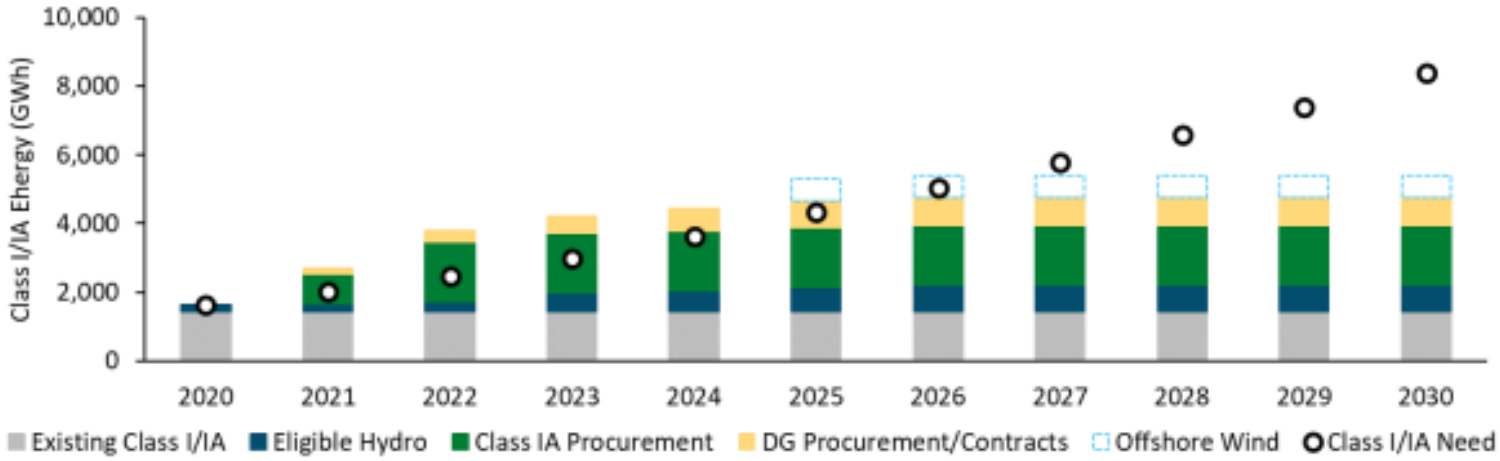
Distributed generation can contribute to achievement of multiple policy objectives in addition to those established in LD 936

- **Emissions reduction:** Maine law requires greenhouse gas emissions reductions of 45% below 1990 levels by 2030 and 80% by 2050
- *Maine Won't Wait: A Four-Year Plan for Climate Action* was released by the Maine Climate Council in 2020, and lays out strategies to achieve these emissions reductions and ensure Maine people, industries, and communities are resilient to the impacts of climate change
- **Renewable Portfolio Standard:** Maine law requires 80% of Maine's electricity to come from renewable sources by 2030, with a goal of 100% by 2050
  - Analysis released by the Governor's Energy Office demonstrates Maine will need new renewable resources built this decade to achieve the 2030 requirement
- **Energy storage goals:** Maine law establishes a goal of 400 megawatts of energy storage deployed in the state by 2030
  - Analysis released by the Governor's Energy Office demonstrates energy storage paired with solar, such as distributed generation, can deliver significant cost-effective benefits to electric ratepayers

Renewable Portfolio Standard

Maine's bipartisan Renewable Portfolio Standard (RPS) requires 80% of electricity to be renewable by 2030

- The *Renewable Energy Goals Market Assessment* released by the GEO in February 2021 found that Maine is on track to reach its RPS requirements through 2025, after which new renewable resources will be needed.
- The figure below illustrates the resources assumed to be in development at the time the study was conducted in 2020. Notably, the yellow segments represent 500 megawatts of distributed solar assumed to be developed as a result of the net energy billing programs and/or previous distributed generation procurements that did not result in projects.

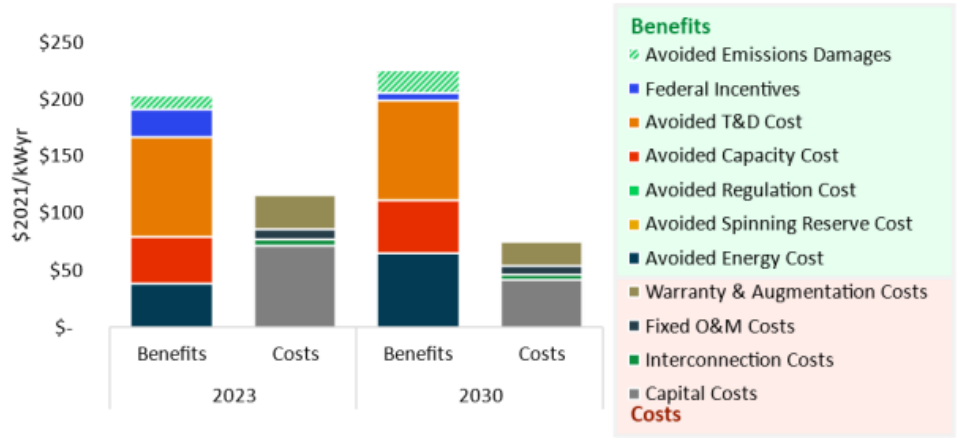


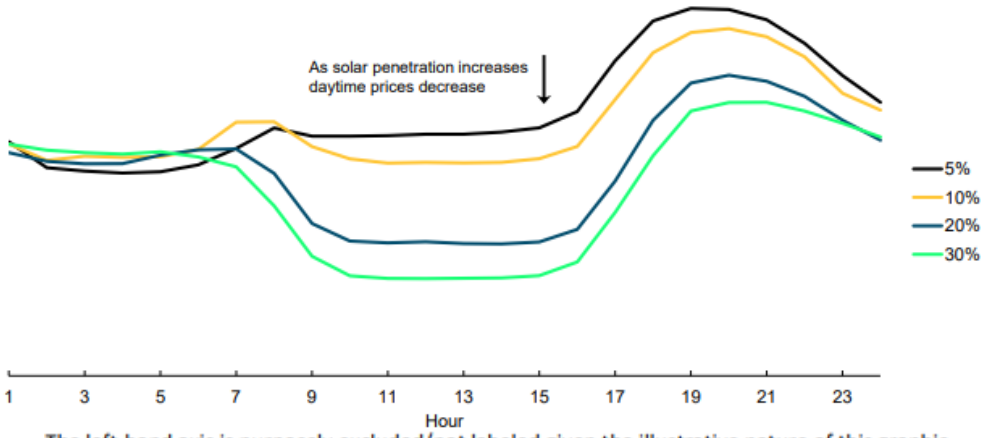
Energy storage

Maine's energy storage goals target 400 megawatts of energy storage in the state by 2030

- Maine is the ninth state to establish energy storage goals
- The Energy Storage Market Assessment released by the GEO found distributed storage paired with solar can produce significant cost-effective benefits to all ratepayers
- The study also discussed the role for energy storage as solar generation increases, illustrating typical daily wholesale energy price patterns observed in jurisdictions with increasing solar penetration

Figure 17. Wholesale storage + solar levelized benefits and costs from society perspective for 2023 and 2030 installation years.





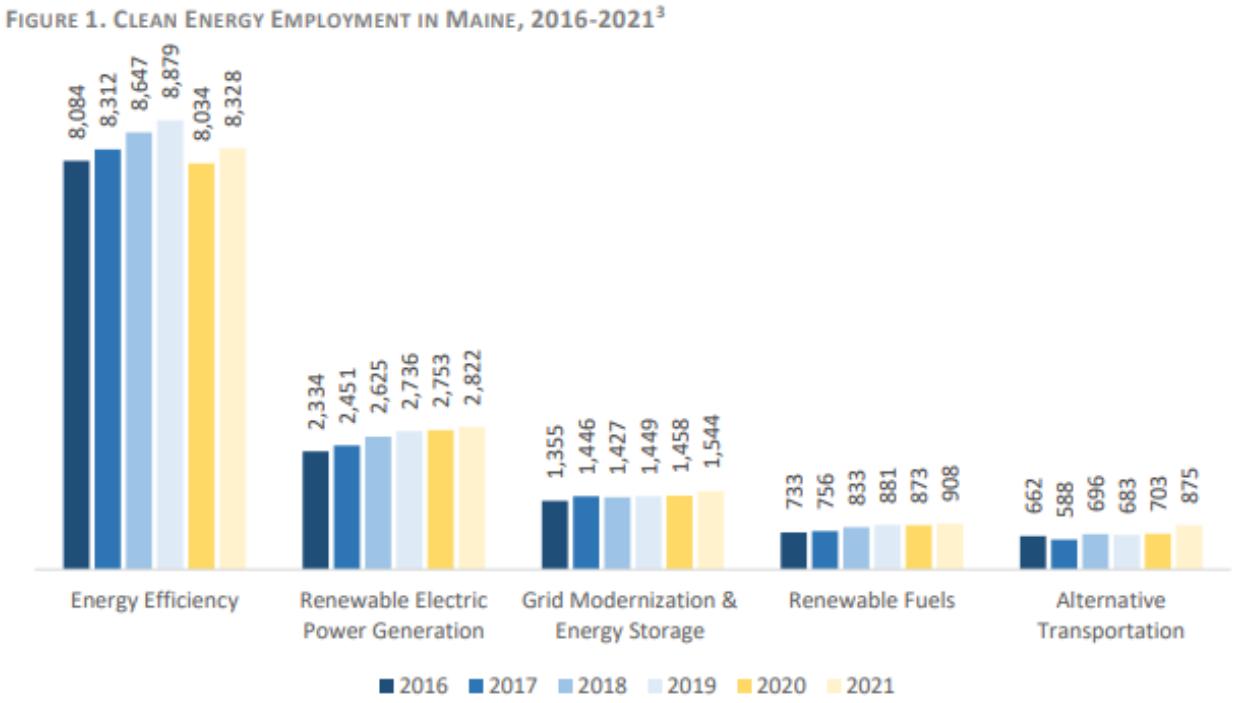
The left-hand axis is purposely excluded/not labeled given the illustrative nature of this graphic.

Growing Maine's clean energy economy

Governor Mills established a goal of **doubling Maine's clean energy workforce to 30,000 jobs by 2030**.

Analysis released by the Governor's Energy Office in 2022 concludes:

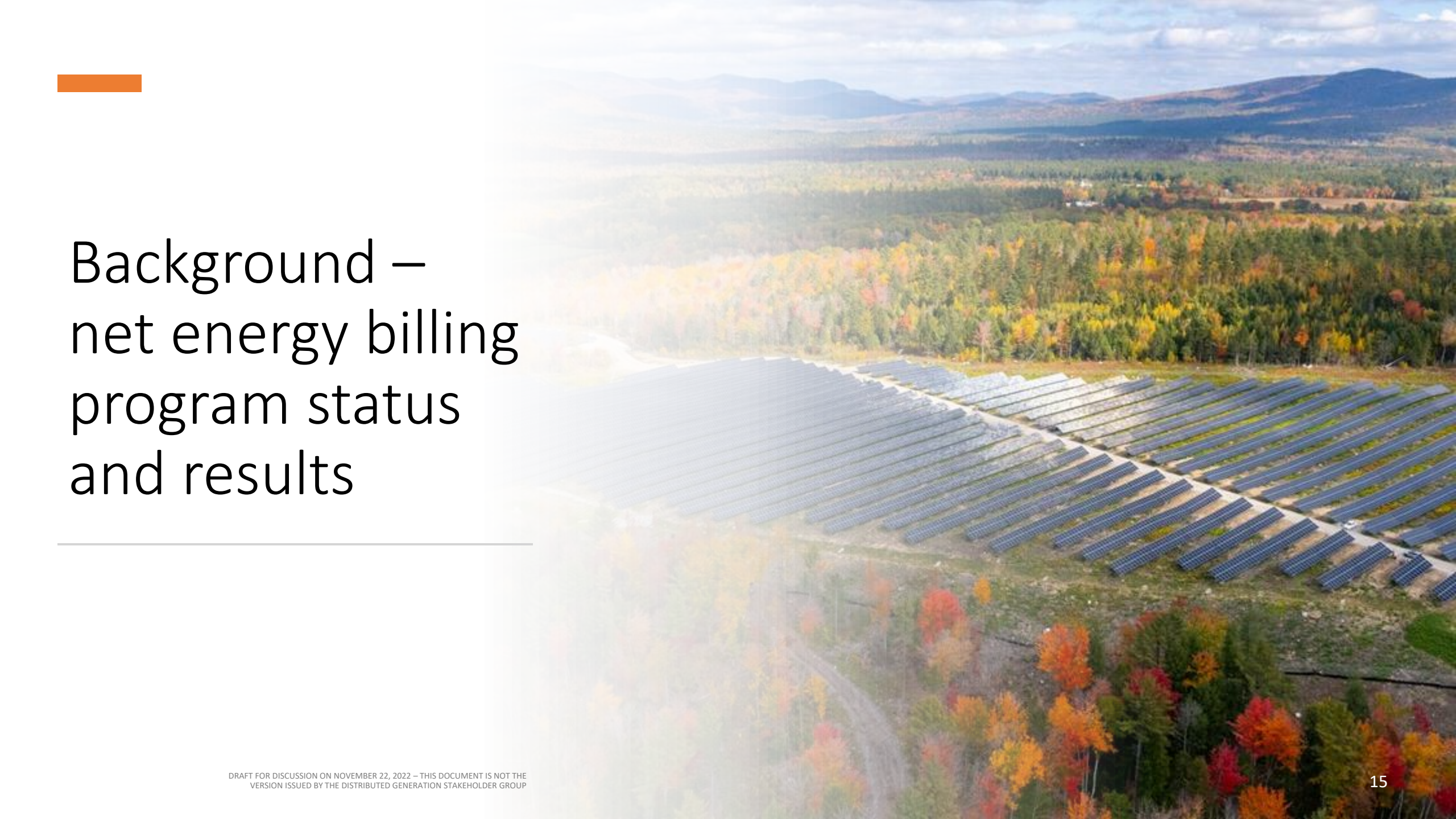
- Maine has an above-average concentration of clean energy-related construction jobs compared to the national, Northeast, and New England averages.
- Solar photovoltaic installers in Maine experienced the second largest percentage increase in employment between 2015 and 2021.



Background – timeline

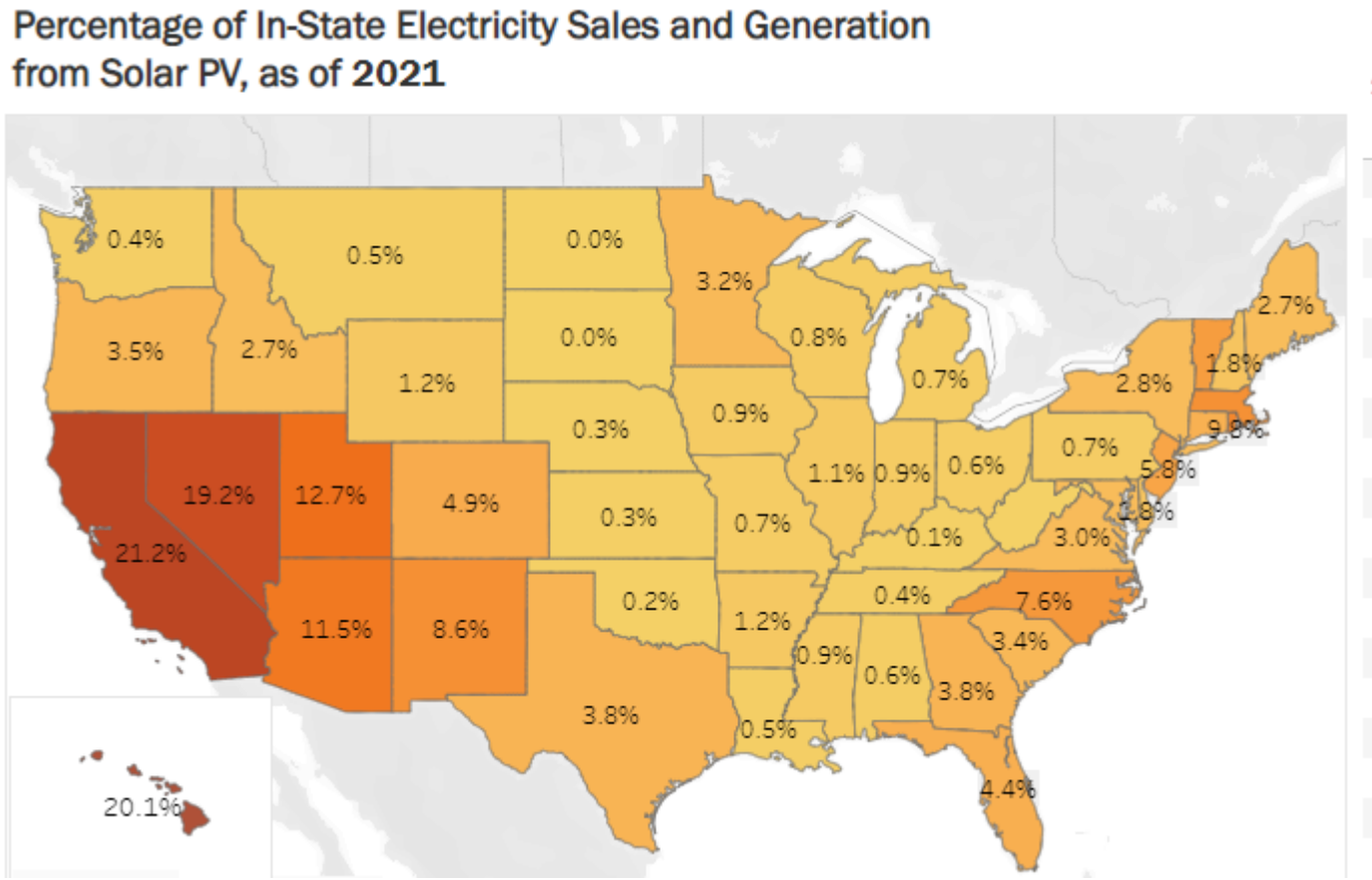
- 2015 – a study conducted by the Public Utilities Commission found the direct levelized value of distributed solar to be approximately $.14/kWh.
- 2019 – the Maine Legislature passed bipartisan legislation, LD 1711, which expanded Maine's net energy billing program to enable "community solar," with any number of utility customers eligible to share a single solar generator less than 5 megawatts. Results of this program, which has driven considerable solar development, are summarized later.
- 2021 – the Maine Legislature passed LD 936, which capped the net energy billing program and directed the Governor's Energy Office to convene the Distributed Generation Stakeholder Group to recommend a successor program.
- 2022 – the Maine Legislature passed LD 634, which decoupled tariff NEB compensation from retail rates to reduce volatility.
- 2021-2022 – the Distributed Generation Stakeholder Group held eighteen public meetings, including two issue-focused work sessions, to fulfill its role established by LD 936.

Background – net energy billing program status and results



Solar generation across the U.S.

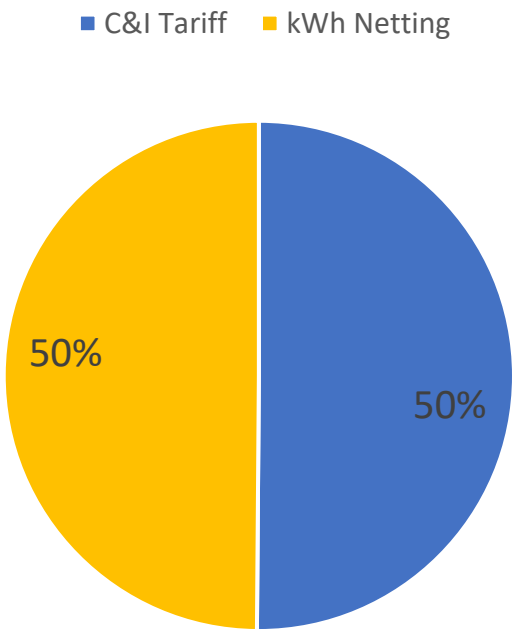
- According to [Lawrence Berkeley National Laboratory](), in 2021 Maine ranked 23rd in the United States in the share of in-state electricity sales from solar, including all scales of projects
  - Of the total 2.7%, 1.5% of in-state electricity sales was attributed to projects greater than one megawatt



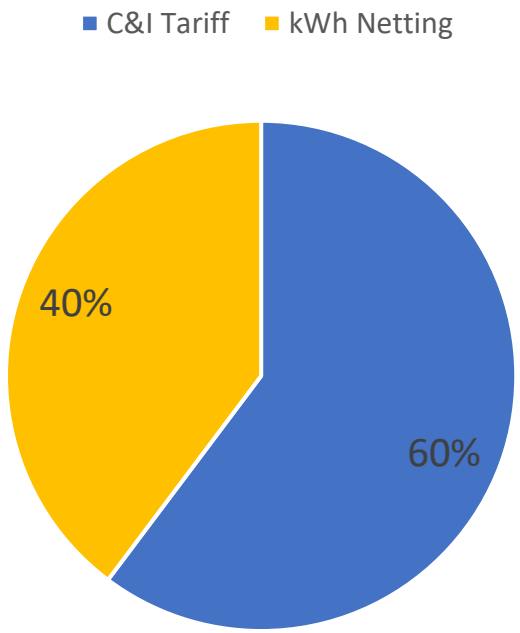
Net energy billing program results

To date, the two programs have been similar in size. However, the pipeline of future projects for the C&I tariff program is larger.

Estimated share of output by net energy billing program
operational projects



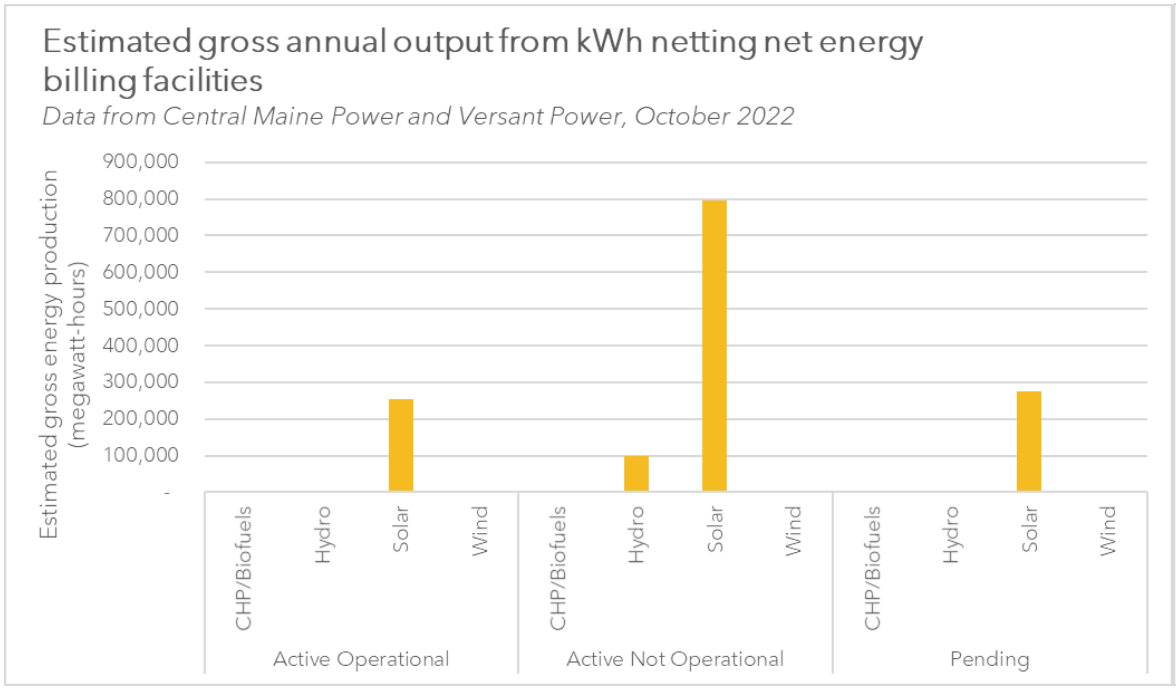
Estimated share of output by net energy billing program
projects in pipeline

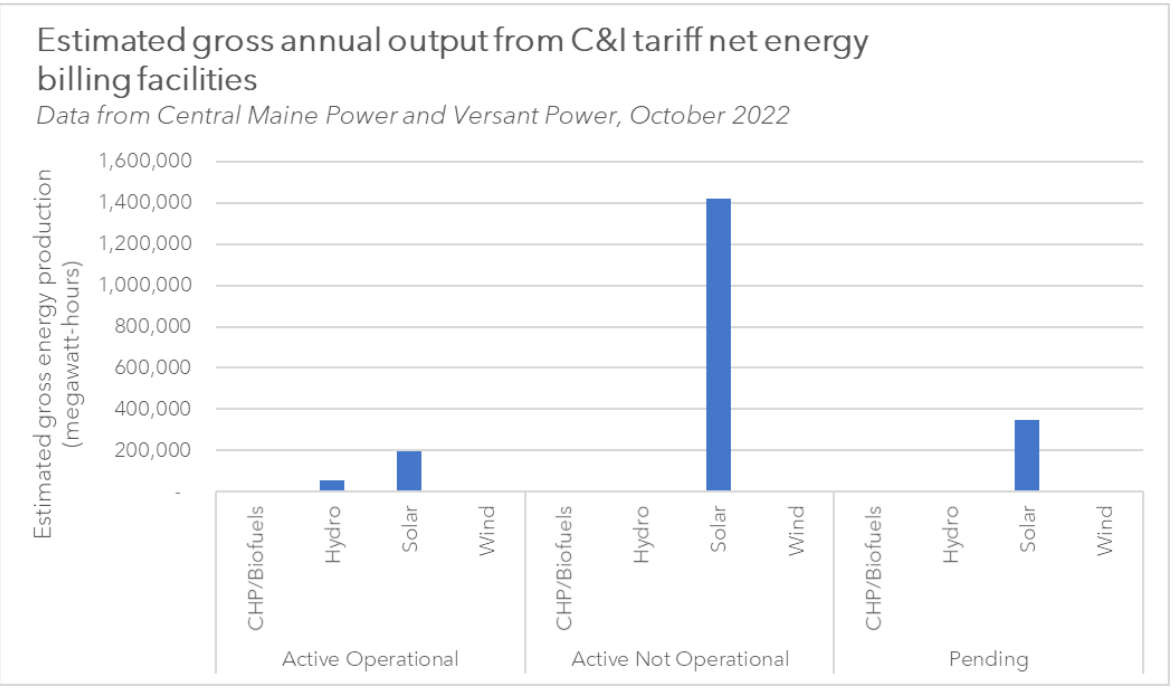


Data from Central Maine Power and Versant Power filed in docket 2020-00199. Estimates based on program results through September 30, 2022.

Net energy billing program results

Both the kWh netting and C&I tariff programs are mostly subscribed by solar facilities, with hydroelectric making up 22% of C&I tariff output and 11% of kWh netting planned output.

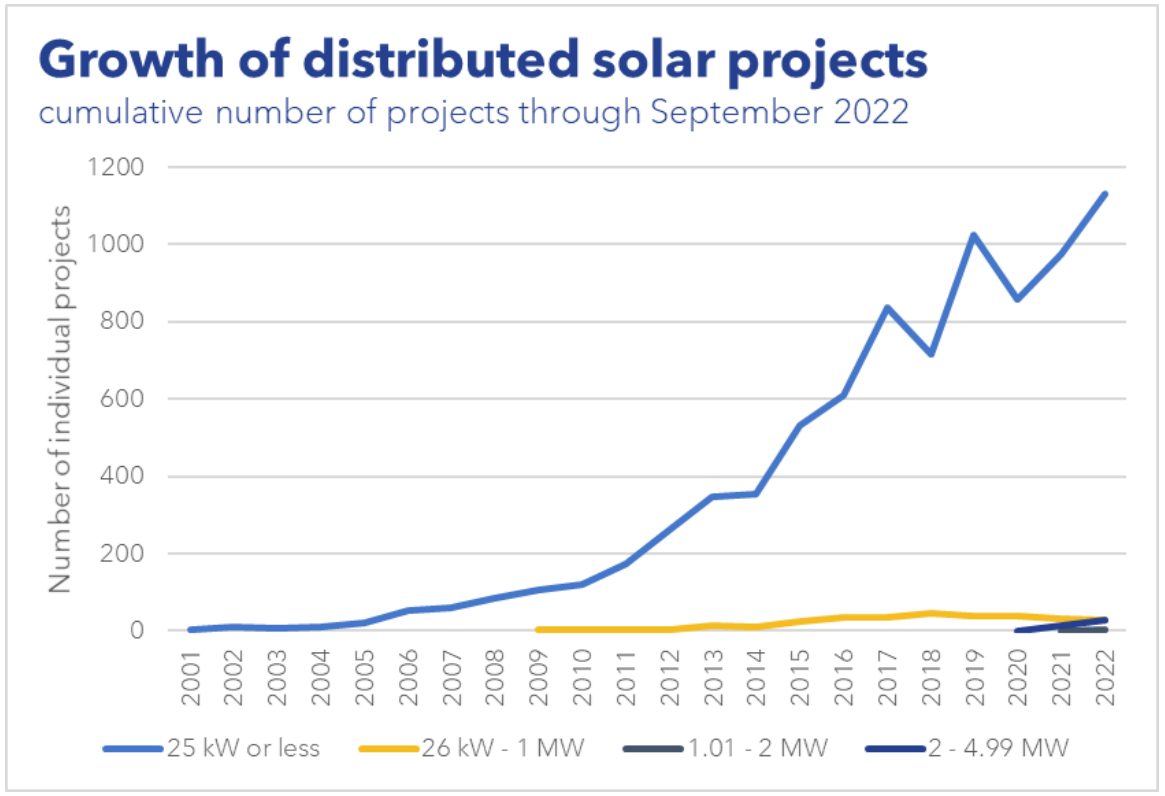


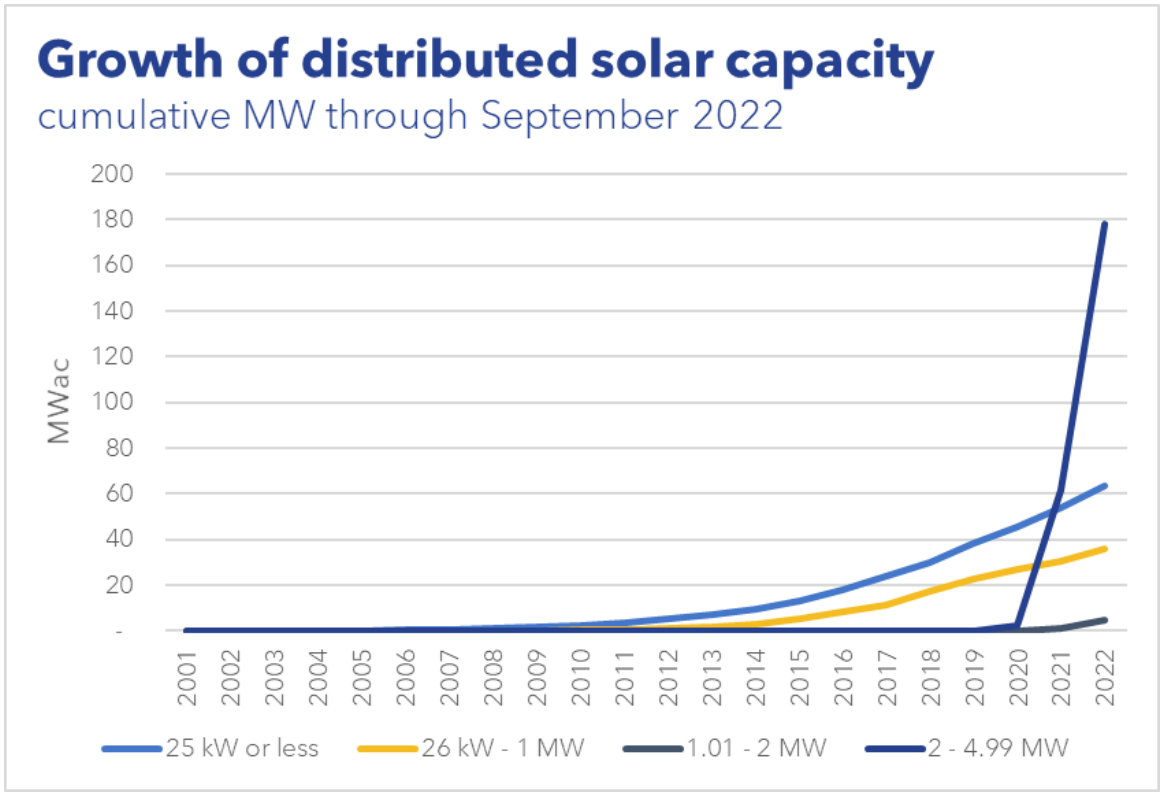


Data from Central Maine Power and Versant Power filed in docket 2020-00199. Estimates based on program results through September 30, 2022.

Net energy billing program results – solar

Overall growth in solar projects has accelerated under the net energy billing program, with substantial capacity additions driven by 2-5 megawatt projects while rooftop-scale projects accelerate at an uneven pace



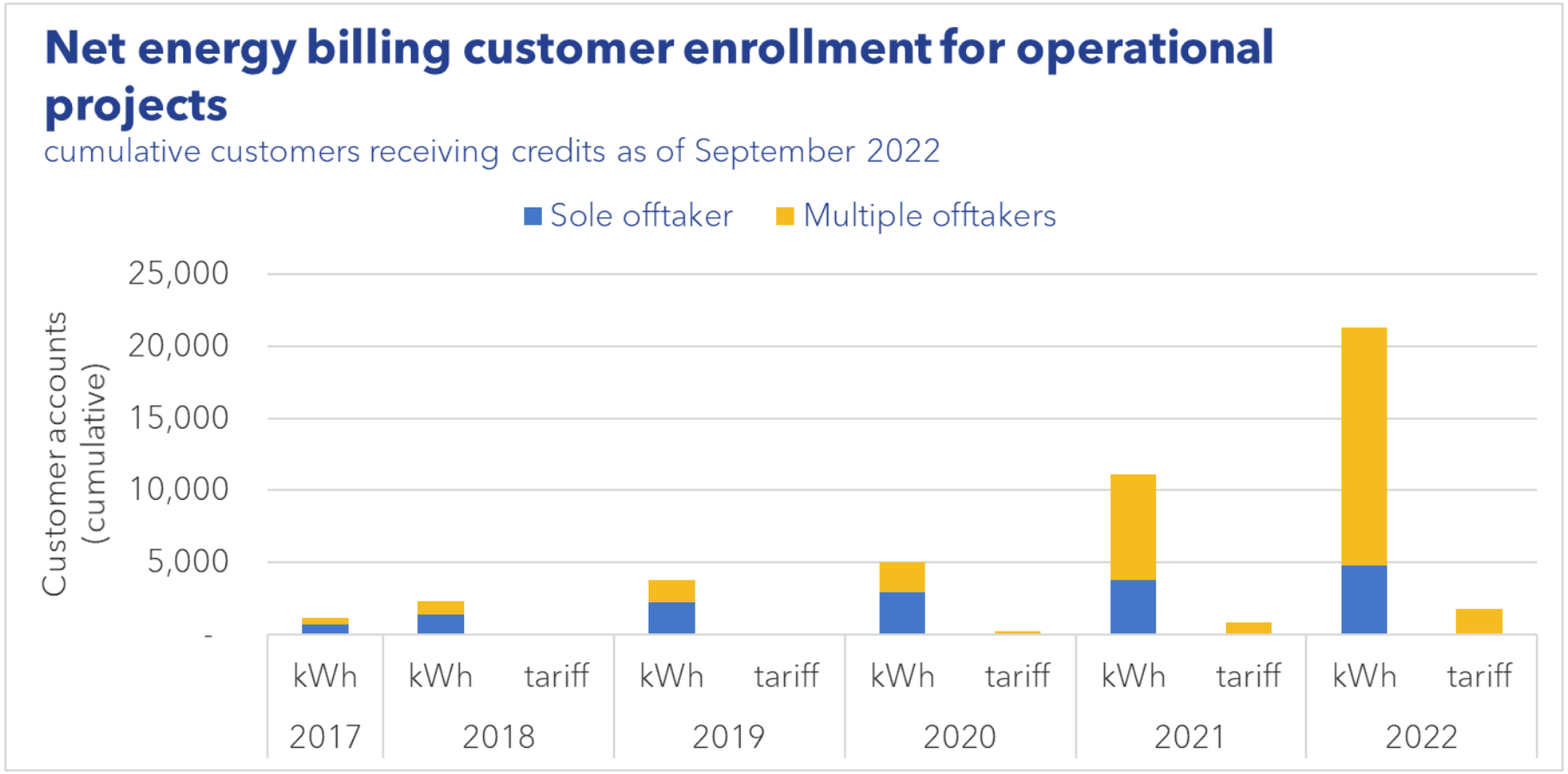


Data from Central Maine Power and Versant Power filed in docket 2020-00199. Estimates based on program results through September 30, 2022.

Note: this straw proposal and the work of the Distributed Generation Stakeholder Group are focused on a successor program for one- to five-megawatt distributed generation resources. This straw proposal does not contemplate changes to net energy billing for projects under one megawatt.

Net energy billing program results – solar

Approximately 18,300 offtakers are enrolled with operating shared net energy billing projects, with 16,500 in the kWh netting program and 1,800 in the C&I tariff program. An additional 4,800 customers are sole offtakers, likely with behind-the-meter projects.



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Note: this straw proposal and the work of the Distributed Generation Stakeholder Group are focused on a successor program for one- to five-megawatt distributed generation resources. This straw proposal does not contemplate changes to net energy billing for projects under one megawatt.

Impact of LD 936

- LD 936 capped the net energy billing program for distributed generation resources between 2 and 5 megawatts and established a series of development milestones these resources must achieve in order to maintain eligibility.
  - Milestones required by December 31, 2021 including interconnection agreements, net energy billing agreements, and non-ministerial permits from state and local authorities.
  - Projects must also reach commercial operation by December 31, 2024.
- On October 5, 2022, the Public Utilities Commission reported that:
  - 19 projects totaling 76 megawatts had completed all statutory milestones and were commercially operational;
  - 257 projects totaling 1,083 megawatts had completed all statutory milestones except for reaching commercial operation.

Impact of LD 634

- The original C&I tariff program provides a monetary credit for generation equal to the applicable standard offer rate plus 75% of the applicable delivery rate
  - In 2022, the C&I tariff rates are approximately $.20/kWh
  - Linking compensation to retail rates, especially the standard offer, leads to volatility
- LD 634 decoupled C&I tariff rates from retail rates and capped the tariff at 2020 levels
  - The reformed tariff begins at approximately $.13/kWh and escalates at 2.25% annually. This rate is comparable to recent DG compensation in other New England states
- Projects that began construction by September 1, 2022 are eligible for the original tariff

Stakeholder group process

Equity and access work session - summary

- The work session was held via Zoom on October 18, 2022 from 9 a.m. – 12 p.m.
- 42 participants joined the session, and three sets of written comments were received afterward.

Key themes

- Broad support for a streamlined and accessible program with clear and tangible benefits
- Emphasis on consumer protection
- Program implementation should align with other state climate and efficiency programs
- Broad support for a program that allows DG to be utilized to reduce energy burdens for LMI customers
- Maximize the benefits of the IRA
- Expand the definition of benefits
- Ensure program benefits accrue to all, whether or not they participate

Complete summary is available online here, as well as presentations from the Maine Climate Council Equity Subcommittee staff, National Renewable Energy Laboratory (NREL), and New York State Energy Research and Development Authority (NYSERDA)

Land use work session – summary

- The work session was held via Zoom on October 19, 2022 from 9 a.m. – 12 p.m.
- 45 participants joined the session, and three sets of written comments were received afterward.

Key themes

- Support for encouraging development in priority areas such as brownfields, while recognizing successful climate mitigation hinges on cost effective renewable deployment
- Improved access to data
- Program design should align with existing state programs and resources
- Maximize the benefits of the IRA
- Need for additional planning capacity at the municipal and regional level
- Desire for standardized regulatory and financial guidance
- Ensure program delivers benefits to ratepayers and communities
- Program design should encourage the pairing of battery storage with DG

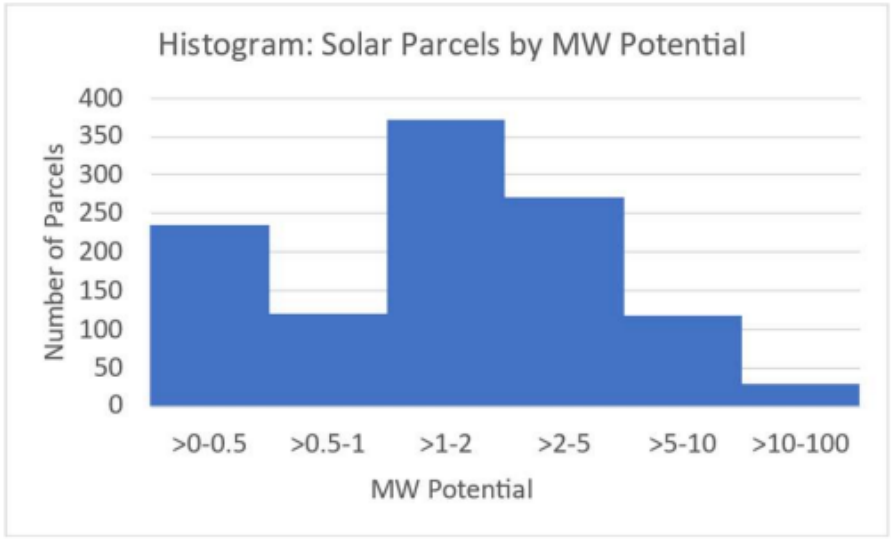
Complete summary is available online here, as well as presentations from the Maine Department of Agriculture, Conservation and Forestry (DACF), The Nature Conservancy in Maine, and Maine Department of Environmental Protection (DEP).

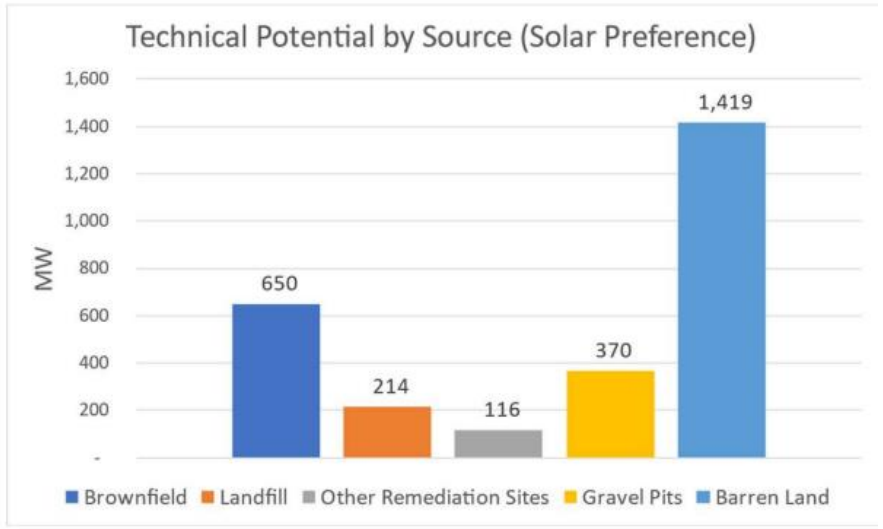
Land use work session – technical potential

Analysis presented at the Land Use Work Session by The Nature Conservancy in Maine found that:

- Maine has substantial technical potential for siting solar on disturbed or degraded lands.
  - Approximately 650 megawatts of technical potential exists on brownfields, 214 megawatts on landfills, 370 on gravel pits.
- Most development on disturbed/degraded parcels is likely to only support smaller facilities (e.g. distributed generation).
- 188 rooftops in Maine could potentially host solar PV projects 950 kilowatts or larger.

Technical potential does not consider the economic/social feasibility of development on parcels – real-world developable capacity is likely lower

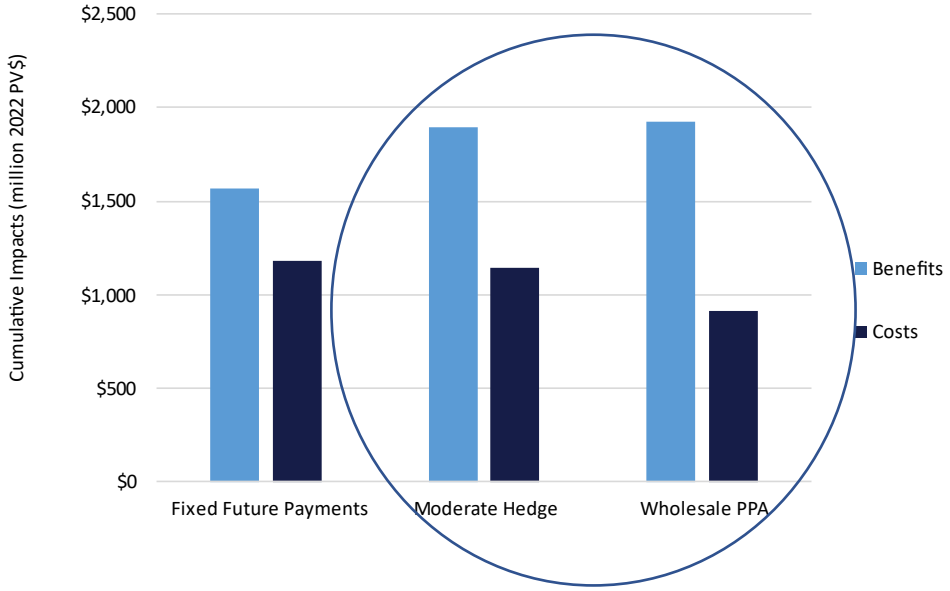




Successor program framework

Proposed successor program framework: program cost-effectiveness

- Draft analysis conducted for the Distributed Generation Stakeholder Group found that multiple program design approaches would yield cost-effective benefits at varying levels
- Benefits and costs are calculated utilizing a cost-benefit test developed with stakeholder group input using national best practices
- The successor program proposed here blends the two most cost-effective options modeled



- The successor program would allocate 70% of its annual capacity to program option "Wholesale PPA," and 30% to program option "Moderate Hedge"
- This blended approach offers multiple pathways for participation, managing risk while ensuring robust competition and overall program cost-effectiveness

Proposed successor program framework: program target

- P.L. 2021 chapter 390 specifies the "optimum total amount of distributed generation for the program period" as "7% of total load based on operational capacity," after "subtracting the total amount of megawatts of commercially operational [2 to 5 megawatt] distributed generation resources developed in excess of [750 megawatts]."
  - This value, expressed in megawatts, is referred to as the "program target."
- Draft analysis provided to the Distributed Generation Stakeholder Group estimates this program target would result in approximately 560 megawatts over five years, or approximately 112 megawatts per year, before netting any potential incremental net energy billing.
  - For example, if total operational 2-5 megawatt NEB = 800 megawatts, the successor program target would be reduced by 50 megawatts, or 10 megawatts per year.

This program is designed to:

- **Build low-cost renewable energy** to save Maine people money and continue growing our clean energy economy
- **Ensure opportunities** for competitive cost-effective distributed renewable energy and storage are captured to **benefit Maine ratepayers**
- Maximize the opportunity to **direct federal financial incentives** to continue deploying cost-effective community-scale renewable energy that delivers tangible benefits to Maine communities
- Deploy the incremental benefits of community-scale renewable energy to **reduce energy burdens** faced by low- and moderate-income households
- **Align** community-scale renewable energy deployment with **siting incentives funded by the federal government**, directing future development to previously disturbed sites including brownfields to minimize impacts

Proposed successor program framework: competitive procurement

- Competitive procurement to drive cost-effectiveness
  - The successor program will harness competitive solicitations to drive down program costs
    - Solicitations will be administered annually for up to 70% of the yearly program target generation, inclusive of renewable energy attributes
    - Projects will submit sealed bids, and those selected will receive their bid price
    - Bidding conditions will be established to ensure appropriate project maturity, including fully executed interconnection service agreement and completed applications for required non-ministerial permits
  - Draft analysis provided to the Distributed Generation Stakeholder Group suggests the competitive solicitations would result in prices ranging from $50 to $90 per megawatt-hour, or $0.05 - $0.09 per kilowatt-hour (2022$)
- The Distributed Generation Stakeholder Group seeks feedback on the competitive structure described here, including any considerations to support robust competition while minimizing attrition

Proposed successor program framework: community access

- Any annual capacity not allocated through the bid process – not less than 30% of annual program capacity – will be available on a first-come, first-served basis with compensation set at the capacity-weighted 20th percentile of selected bids
  - If selected projects range uniformly from $0.05 - $0.10/kilowatt-hour, compensation for this block would be $0.06/kilowatt-hour
- The Distributed Generation Stakeholder Group seeks feedback on appropriate mechanisms to prioritize this capacity set-aside to maximize public benefits
  - For example, should the set-aside be available exclusively to state-, municipal- or school-sponsored projects

Proposed successor program framework: siting preferences aligned with federal funding

- Competitive solicitations will provide a bid preference to projects sited in areas that qualify for incremental investment tax credit benefits under the Inflation Reduction Act
  - Projects sited in “energy communities” (e.g. on qualified brownfield sites) will be evaluated at 95% of bid price
  - Projects sited in “low income or disadvantaged communities” and that demonstrate meaningful benefits to the community will be evaluated at 95% of bid price
- The Distributed Generation Stakeholder Group seeks feedback on the suitability and likely efficacy of the bid preference mechanism described here

Proposed successor program framework: direct benefits to decrease energy burden aligned with federal funding

- The IRA provides a 20% additional investment tax credit to projects that provide a direct benefit to low- and moderate-income households
  - To access this federal benefit, net revenue from project contracts will be designated to provide electricity bill relief to qualified customers through a credit that complies with forthcoming guidance established by the U.S. Department of the Treasury to establish qualification for this tax credit
  - This mechanism is intended to satisfy the requirements of LD 936, reduce costs and provide certainty regarding anticipated tax benefits to project developers, and provide tangible benefits to energy burdened households as a direct result of the distributed generation program
- The Distributed Generation Stakeholder Group seeks feedback on this proposed approach, including any potential barriers or considerations related to implementation

Proposed successor program framework: energy storage and grid optimization to maximize value

- Maximizing value by requiring the inclusion of energy storage where beneficial
  - Energy storage enables energy produced by distributed generation to be provided at high-value times, increasing the value of the generation and lowering overall energy costs to ratepayers
  - Energy storage can provide advanced grid capabilities that improve power quality and reliability while integrating additional renewable energy into the grid
- Ensuring ratepayer benefits through optimal electrical siting
  - Areas of the distribution system where incremental distributed generation would be likely to maximize locational net benefits should be identified, and projects sited to maximize those benefits be prioritized
    - Locational net benefits considered should include avoided ratepayer-funded transmission and distribution system investments, voltage support/power quality, reliability, and resiliency
- The Distributed Generation Stakeholder Group seeks feedback on these provisions. The Stakeholder Group will also review draft analysis of the potential benefits and costs of including energy storage during its December 6 meeting.

Proposed successor program framework: additional recommendations to ensure robust competition

- Ensuring a robust competitive process that produces the anticipated benefits attributed to the successor program requires the alignment of policy mechanisms
  - If implemented as described in this straw proposal, certain projects not subject to 35-A MRS §3209-A (7) but eligible for participation in the successor program – projects between one and two megawatts – would face ambiguous program incentives, undermining the intended result of the successor program
  - Future projects between one and two megawatts that are not collocated with load should be directed to the successor program
- The Distributed Generation Stakeholder Group seeks feedback on this additional recommendation.

How to submit your feedback

- **Interested parties and members of the public are invited to submit comments on this proposed framework.** All comments will be considered when preparing a final report to be submitted to the Legislature at the end of 2022.
- To submit your feedback, use this form: [link to Form]
- **All comments must be submitted by 11:59 p.m. on December 14, 2022**