Planning and Development Committee
April 6, 2016
6:00 PM
Conference Room
AGENDA

1. Approval of March 16, 2016 Minutes

2. Committee Applications:

   Planning Board Vacancy-Andrew Nelson Resignation

3. Updates:

   Marina Sign Progress

4. Old Business:

   A. Home Occupation Revisions Draft
   B. Flag Lots Amendment Draft

5. New Business:

   A. Karen Marysdaughter – Solarize Bangor
   B. Harbor Ordinance Discussion

6. Zoning Considerations/Discussion

   A. 23 Cottage Street Request/Discussion

7. Citizens Initiatives:
8. Public Comments:
9. Committee Member Comments:
10. Adjourn

Note: Mineral Extraction Pending
Codification Pending
Subdivision Amendments Pending- PBOC Reschedule
Shoreland Zoning Ordinance Update Drafting

Planning and Development Committee
March 2, 2016
6:00 PM
Conference Room
DRAFT MINUTES

Attendees:

Committee	Staff
David Ryder, Mayor/Acting Chair	Angus Jennings, Manager
Stephen Wilde	Dean Bennett, Community Dev Dir (CDD)
Dennis Marble	
Terry McAvoy	
David Ryder	

1. Approval of March 2, 2016 Minutes

2. Committee Applications: None

3. Updates:

   A. Status of Planning Board Review
      Subdivision Open Space
      Codification
      Zoning Reference to Open Space

   Community Development Director (CDD) reported to the Committee that the three items have been acted upon by the Planning Board and were being scheduled to return to the full Town Council with recommendation "ought to pass". Town Manager reported that they would be on the next Council agenda.

   CDD further reported that the two remaining Subdivision Ordinance items regarding Criteria/Definitions and Private Road Subdivisions we be discussed at the next scheduled Planning Board Ordinance Committee meeting on March 30th.

4. Old Business:

A. Draft Mineral Extraction Repeal – Attorney

The Town Manager reported that the initial review from the town attorney was just received and staff will need to review the material. After discussion on the history and purpose of the item, the Board determined that although action should be considered is not a high priority as other items. The Community Development Director and Manager will review and report back to Committee.

B. Draft Home Occupation – Attorney

The CDD provided the Town Attorney's reviewed and revised draft to the Committee which referenced the need to create specific criteria from which the Code Enforcement Officer could categorize the type of Home Occupation.

CDD stated he was unsure of what additional criteria or guidance was needed to assist the Code Enforcement Officer in making the categorical determination of the type of Home Occupation per the Town Attorneys memo. CDD's experience was that the nature or specifics of the application, when compared to the two types of criteria (Minor/Major) in the Zoning Ordinance would provide adequate basis for making the determination on classification of type of Home Occupation.

After discussion on the intent to simplify and expedite the process and review of some applications, it was decided that continue work was warranted and staff would search for additional examples within other communities, seeking help from the Planners List Serve.

C. Flag Lots Discussion

CDD provided language and examples with which the Town could provide for the development of limited rear lot development with the utilization of a common right-of-way or reduced "driveway" frontage. If adopted, the Flag Lot provisions would allow for residential in-fill development, on those lots of sufficient size and frontage, which does not rise to the level of a subdivision.

After reviewing the material, the Committee indicated their support for the concept. Staff will incorporate the suggested concept into the proper format within the Zoning Ordinance and bring back to the Committee at a future meeting.

5. New Business

A. Sewer line for Ammo Park and Triangle, potential TIF funding to upgrade to larger pipe.

With the recent pre-application submittal by MRC/Fiberight to develop a recycling and processing facility in the Triangle area with access from Coldbrook Road, and the necessity for that development to utilize existing infrastructure within the Ammo Park and Hampden Business and Commerce Park, a question of capacity to accommodate the proposed development and future development is currently being evaluated.

Initial engineering reports indicate that the current 8 inch sewer line, recently installed in the Ammo Park, that extends down to the Hampden Business and Commerce Park, is adequate to serve the MRC/Fiberight development and additional development detailed in Woodard and Curran report. Whereas that 8 inch sewer is being reinstalled, the question has been posed as to the potential benefit of increasing the 8 inch line to 10 or 12 inches.

Whereas the Emera TIF captured resources have been specifically designated for infrastructure expansion into the Triangle area, the potential expenditures from the TIF fund to increase the size of the 8 inch sewer were contemplated.

After a lengthy discussion on the potential for continued development of the triangle area, and given that indications are that the 8 inch sewer line would be adequate to accommodate for a considerable amount of future development, the Committee felt that a more responsible use of TIF captured dollars would be the investment of necessary infrastructure in the Coldbrook Road to accommodate commercial development of the Coldbrook Road and surrounding area. The Committee was uncomfortable with the investment in sewer enlargement in Ammo Park whereas if for any reason the MRC/Fiberight development did not occur, there would be an expenditure of public resources without public benefit. The Committee felt that infrastructure investment in the Coldbrook Road development was a more responsible use of TIF dollars and a more immediate return in public benefit.

6. Zoning Considerations/Discussion: None
7. Citizens Initiatives: None
8. Public Comments: None
9. Committee Member Comments: None
10. Adjourn: 8:15pm

Dean Bennett <economicdevelopment@hampdenmaine.gov>

Notice of Resignation

Andrew Nelson <ethem399@aol.com> Mon, Apr 4, 2016 at 9:43 AM
To: Dean Bennett <economicdevelopment@hampdenmaine.gov>

Dean,
After enjoying many years of serving on the town planning board I am afraid I must give up my seat due to scheduling conflicts with work. I appreciate the experience serving and will miss the great group the town has representing them on the board.
Best regards,
Andrew Nelson

Sent from my iPhone

4.10. Home Occupation Permits – Home Occupation Permits shall be issued to a person or corporation. It shall not run with the land nor is the permit transferable to a subsequent owner or renter. Applicants shall demonstrate that they have adequate right, title and interest in a property in order to apply for a home occupation. Where home occupations are expressly prohibited by deed restriction, lease, subdivision covenant and or subdivision plan condition the Planning Board shall find that the applicant lacks adequate right, title or interest to grant a home occupation permit.

4.10.1. Classification of Home Occupations – Home Occupations will be classified as either Minor or Major Home Occupations by the Code Enforcement Officer.

Minor Home Occupations. A home occupation that complies with the criteria established in 4.10.1 and 4.10.2 shall be considered a minor home occupation and permitted in all zoning districts in which home occupations are a permitted use.

Applications for Minor Home Occupations shall include a completed application form, site sketch in accordance with Article 4.1.9.1, and a narrative addressing Article 4.10.1 General Home Occupation Standards and Article 4.10.2 Minor Home Occupation Standards.

Major Home Occupations. A home occupation that complies with the criteria established in 4.10.1 and 4.10.3 shall be considered a major home occupation and permitted in all zoning districts in which home occupations are a permitted use.

Applications for Major Home Occupations shall include a completed application form, site plan in accordance with Article 4.1.6 and a narrative addressing Article 4.10.1 General Home Occupation Standards and Article 4.10.3 Major Home Occupation Standards. If new construction is proposed, the requirements of Article 4.1 Site Plan Review shall also be met.

4.10.2 Notifications

Minor Home Occupations – Minor Home Occupations have little impact on the property and surrounding neighborhood. In order to potentially expedite the review and approval of Minor Home Occupation Applications, a Public Hearing will not be required unless requested by abutting land owner/s within 14 days of receiving notification of the application. All abutting land owners within 300 feet of the subject property will receive written notification of the nature of the application for Home Occupation, and a form to request a Public Hearing on the application. If a Public Hearing is requested within 14 days, the application will automatically be forwarded to the Planning Board as a Major Home Occupation Application and subsequent Public Hearing scheduled. If a Public Hearing is not requested within 14 days of notification, the Code Enforcement Officer will process the application and render a decision.

Major Home Occupations – Major Home Occupations will be forwarded to the Planning Board for review. The Planning Board process includes notification of abutters, public posting of the hearing date, and scheduling of a Public Hearing.

4.10.1 General Home Occupation Standards: All home occupations shall be planned, operated and maintained according to the following standards:

> *4.10.1.1 Employees* - A home occupations shall be limited in number of employees and /or family members.

4.10.1.2. Incidental and Subordinate - To insure that the character of the neighborhood is not transformed from one which is primarily residential, the home occupation shall be clearly incidental and subordinate to the use of the dwelling place as a place of residence.

4.10.1.3. Appearance and Performance Standards - The appearance of the structure or the premises shall not be altered or the occupation within the residence conducted in such a manner that the structure or premises differs from its residential character by use of colors, materials, premises layout, or construction.

4.10.1.4. The proposed home occupation shall not be overtly evident from beyond the property line of the subject premises except for the presence of a sign or customer/client parking.

4.10.1.5 Home occupations shall not cause sound, noise, odors, dust, gas, fumes, smoke, light or other dangerous emissions discernible or detectable from beyond the property line or the subject property.

4.10.1.6 No home occupation shall create a fire hazard to the premises or neighboring premises.

4.10.1.7 No home occupation shall create electrical interference such that it causes visual or audible interference with any radio or television receiver off the premises.

4.10.1.8 The proposed home occupation will not interfere with the peaceful use and enjoyment of residential properties located in the area of the proposed use.

4.10.1.9 *Signs and Advertising* – On premise signs are limited in size and illumination to insure the character of the area and property is preserved. Off-premise use of signs and advertising is limited due to the potential for unwanted or unmanageable traffic flow, which may be disruptive to the character of the neighborhood.

4.10.1.10 *Traffic and Parking* – The proposed site layout shall provide for safe ingress and egress to and from public and private roads by providing adequate sight distances and minimal turning conflicts with roads and driveways. Provision shall be made available for vehicles to turn around on the premises. Off-street parking shall be provided for all expected customers/clients of the home occupation. No home occupation shall be approved or allowed to operate if it generates more than the allowed average auto trips by customer/clients in any one day.

4.10.1.11 *Utilities and Public Facilities* – There shall be no use of utilities or community facilities beyond that normal to the use of the property for residential purposes.

4.10.2 Minor Home Occupation Standards – In addition to Article 4.10.1 General Standards, Minor Home Occupations shall meet the following additional standards:

4.10.2.1 Employees: Minor Occupations shall be conducted by only family member residing in the dwelling.

4.10.2.2 Parking: A maximum of two (2) on premise parking spaces shall be provided to meet

the needs of the customers/clients.

4.10.2.3 Deliveries: A maximum of two (2) deliveries per day in vehicles that typically serve a residential neighborhood. Large commercial vehicle deliveries should be avoided.

4.10.2.4 Space: The Home Occupation will not occupy more than 30% of the floor area of the ground floor of the primary residential structure.

4.10.2.5 Hours: Hours of operation area limited from 8am-6pm.

4.10.2.6 Auto Trips: Home Occupations shall no generate more than an average of 10 auto trips per day.

4.10.2.7 Signs: One (1) unlighted, unreflective sign, no greater than four (4) square feet is allowed on premises. Off-premise Official Business Directional Signs, as defined in 23 M.R.S.A §1903 are prohibited. Newspaper, radio, television, internet or telephone advertising may be used to the extent that Article 4.10.1.5 is not violated.

4.10.3 Major Home Occupation Standards – In addition to Article 4.10.1 General Standards, Major Home Occupations shall meet the following additional standards.

4.10.3.1 Employees: Major Home Occupations shall be conducted by member or members of the family residing in the dwelling and/or not more than 1 person, who do not reside on the premises.

4.10.3.2 Parking: A maximum of three (3) on-premise parking spaces shall be provided to meet the needs of the customer/clients.

4.10.3.3 Deliveries: A maximum of two (2) deliveries per day in vehicles that typically serve a residential neighborhood. Large commercial vehicle deliveries should be avoided.

4.10.3.4 Space: The Home Occupation shall be carried on wholly within the principal residential or accessory structure on the premises. If carried on within the principal residential structure, it shall not occupy more than 30% of the floor area. If the home occupation is carried on within an accessory structure, the total floor area dedicated to the home occupation shall not exceed fifty (50) percent of the total finished floor area of the principal residential structure. Home Occupation shall not utilize outdoor storage or display.

4.10.3.5 Hours: Hours of operation are limited from 8am-6pm.

4.10.3.6 Auto Trips: Home Occupation shall not generate more than an average of 10 auto trips per day.

4.10.3.7 Signs: One (1) unlighted, unreflective sign, no greater than four (4) square feet is allowed on the premises only. Off-premise Official Business Directional Signs, as defined in 23 M.R.S.A §1903 are prohibited. Newspaper, radio, television, internet or telephone advertising may be used to the extent that Article 4.10.1.5 is not violated.

4.10.4 Additional Conditions Necessary for Approval of Home Occupations. If in the judgment of

the Planning Board additional improvements or safeguards are necessary in order to make a proposed home occupation safe, sanitary or less intrusive in a neighborhood, the Board may place conditions on the approval of the home occupation that further limit the operation of the business, provide for screening or buffer yards or improve traffic safety.

4.10.5 Alterations to Land and Buildings of Previously Approved Home Occupations. If additions or alterations have been constructed, or are proposed for residences or accessory use buildings for previously approve Home Occupations which in the opinion of the Code Enforcement Officer significantly alter a Planning Board/Code Enforcement Officer approved home occupation, the Code Enforcement Officer shall require that the home occupation use seek a revision from the Planning Board.
In order to determine if the alterations or additions alter the previously approved Home Occupation, the Code Enforcement Officer shall review the municipal record file including if applicable, minutes of the Board meeting at which the Home Occupation was approved. The Code Enforcement Officer shall not issue a building permit or certificate of occupancy for such additions or alterations that have not received Planning Board Home Occupation permit approval unless the applicant surrender the home occupation permit and or conditional use/site plan home occupation use approval in writing.

4.10.6 Discontinuance and Abandonment of a Home Occupation. If a home occupation, created under the provisions of the Ordinance prior to January 2, 2005, has been discontinued or abandoned for a period of 12 months the home occupation use may not be re-established without first receiving a Home Occupation Permit under the provisions of Article 4.10 of this ordinance. The Code Enforcement Officer shall have authority to issue a determination that the use has been discontinued or abandoned for a 12-month period.

4.3. Conditional Lot Dimensions and Rear Flag Lots

4.3.1. Purpose - It is the purpose of this section of the Ordinance to establish a procedure which would allow for residential development on certain lots which, because of inadequate road frontage, would not otherwise be usable for residential purposes. The lots must meet certain requirements as established in this section of the Ordinance and the development of the lots must be consistent with wise land use planning.

4.3.2. Permit Required (Deleted 6-15-2015)

4.3.3. Information Required in Application - Application for the development of lots requiring a conditional lot dimension permit or rear flag lot permit shall be accompanied by plans, drawn to scale, containing the following information:

1. Scale of map.
2. Name of applicant.
3. Boundaries of tract of land.
4. Location of existing and proposed buildings and other structures, including use and proposed use thereof.
5. Location of buildings on abutting properties or within five hundred (500') feet of the property line of the proposed development.
6. Location of existing public streets.
7. Location of all curb cuts within five hundred (500') feet of the curb cut which will result from the development of the lot. *(Amended 6-15-2015)*
8. Location of existing and proposed rights of way, utilities and easements therefore; including sanitary sewerage, water and all electricity.
9. *(Deleted 6-15-15)*

4.3.4. Application Procedure The filing of the required application with the code enforcement officer shall constitute filing of an application for conditional lot dimension approval or rear flag lot permit. *(Amended: 11-17-03, 6-15-2015)*

4.3.5. Planning Board Review and Action – (Deleted 6-15-2015)

4.3.6. Standards Governing Conditional Lot Dimension Permits

1. *General Requirements* - A conditional lot dimensions permit may only be issued if the following conditions are met:

   a. The lot and access way must be located in the Rural District.*(Amended 6-15-2015)*

   b. *(Deleted 6-15-2015)*

   c. The lot is of such dimensions that an imaginary square whose minimum side dimension is the minimum road frontage required in the district where the lot is located, can be accommodated within its borders. Any building that is located on the lot shall be located within the perimeter of such a square. If the lot falls within more than one zoning district, the side dimension for the square shall be determined by the district in which the building is to be built.

d. No building shall be placed closer to any lot line or right of way boundary than the distance of the greatest required minimum setback in the district in which the building is located. In determining which dimension is applicable, the characteristic of the lot relative to off and on lot sewer and/or water and the dimensional, requirements associated with such characteristics shall be used. No primary building shall be less than one hundred (100') feet from existing dwellings. ***(Amended 6-15-2015)***

e. There shall be no alternative access to the lot which conforms with the road frontage requirements established for the district.

f. The development of the lot shall cause no unsafe or unhealthful condition. Of particular concern in this regard should be traffic safety.

g. The lot shall conform to all dimensional requirements of this Ordinance except road frontage. Building setback requirements shall be determined by *Article 4.3.6.1.d* of this Ordinance. h.

Only single family residential uses shall be allowed on these lots.

i. The development of the lot shall not preclude the orderly development of the neighborhood and the community.

j. The lot must have at least sixty-six (66) feet of road frontage.***(Amended 6-15-2015)***

k. Conditional lot dimension permits can be issued for the cul-de-sac portion of a subdivision. The provisions of this Article shall only apply to single lots and shall not be used in the lotting of subdivisions. All other subdivision activity shall be governed by the Subdivision Ordinance of the Town of Hampden. ***(Amended 6-15-2015)***

l. No more than one (1) dwelling unit may be placed on the lot. ***(Amended 6-15-2015)***

2. *Requirements Pertaining To Lots Having More Than 66 Feet Road* ***(Deleted 6-15-2015)***
3. *Requirements Pertaining to Lots Having Less Than Sixty-Six (66') Feet but at Least Thirty (30') Feet of Road* ***(Deleted 6-15-2015)***

4.3.7. Standards Governing Rear Flag Lot Permits

1. Purpose: Flag lots are intended to allow limited development of interior lots that may otherwise be underused, and creation of which, does not constitute a subdivision.

2. General Requirements for Flag Lot Development

a. The lot or access way must be located in the Residential A or Residential B District.?

b. Rear Flag Lots may be accessed by a strip of land owned by the owner of the rear lot or by a deeded right-of-way through another parcel.

c. The applicant shall apply for a Town of Hampden Driveway Permit and shall request that the Public Works Director provide the Code Enforcement Officer a report regarding his review of the suitability for access as proposed for all access drives proposed under Flag Lot Permits.

d. Rear Flag Lots shall have safe access for fire, police and emergency vehicles as determined by the Public Safety Director or his/her assigns.

e. Flag lots shall not be created as part of a subdivision or within an approved subdivision.

f. No turns or corners shall be allowed in the strip of land or right-of-way connecting the flag lot to the public right-of-way.

g. The portion of the lot that is intended for construction of a proposed residence and other improvements shall itself meet the dimensional setback standards of the zoning district and be located no less than 100 feet from abutting residential structures.

h. The access strip shall not exceed 1,000 feet in length including the access strip to run the full depth of the flag lot. The driveway is not required to extend the full length of the required access strip.

3. Access to Rear Flag Lot: Rear Flag Lots can be created either by an owned access strip or deeded access strip.

4. Lots Accessed by Ownership (Owned Access Strip)

a. A single rear lot may be accessed by a strip of land owned by the owner of the rear lot that has a minimum width of 25 feet and at least 25 feet on a public street.

b. No more than two access strips shall be adjacent to one another.

c. When there are two access strips adjacent to one another, a shared driveway shall be used and the width of each access strip may be reduced to 15 feet.

5. Lots Accessed by Deeded Right-of-Way (Deeded Access Strip)

a. A Rear Flag Lot may utilize a deeded right-of-way with a minimum width of 25 feet, through another parcel.

b. No more than two access strips shall be adjacent to one another.

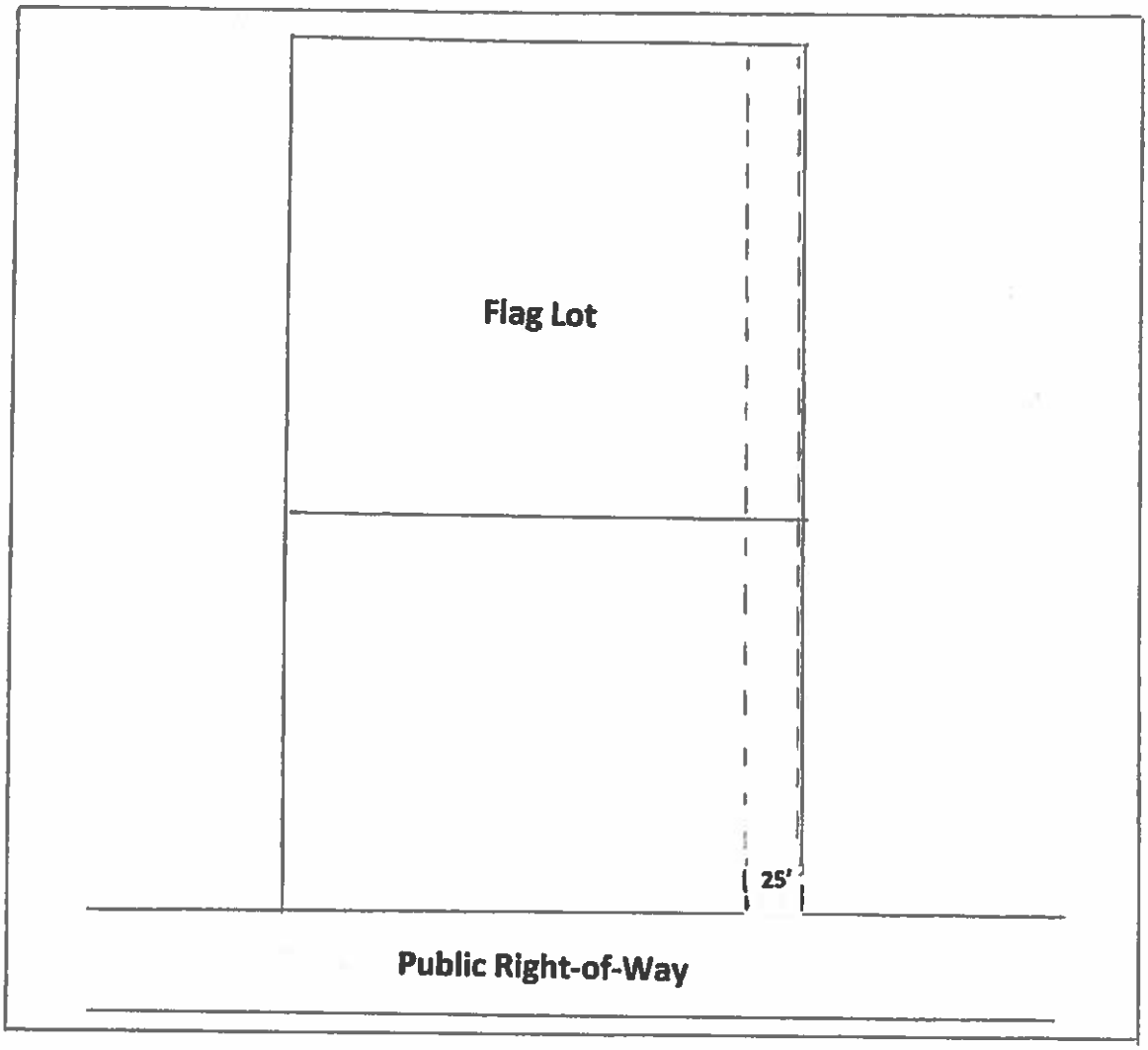
c. When there are two access strips adjacent to one another, a shared driveway shall be used and the width of each access strip may be reduced to 15 feet.

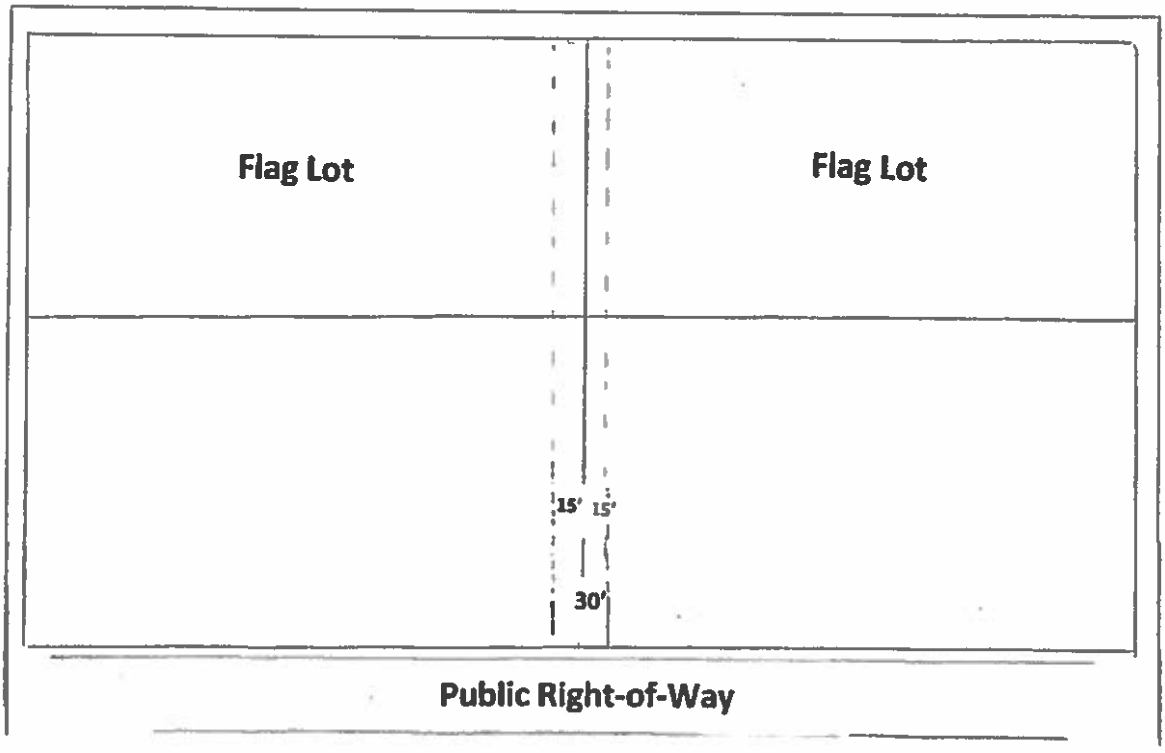
Definitions to be Added:

Rear Flag Lot: A lot which is located to the rear of another lot which lacks minimum road frontage required in the land use district, and access to which is either by a strip of land which is part of that lot or a deeded right-of-way over one or more of the front lots.

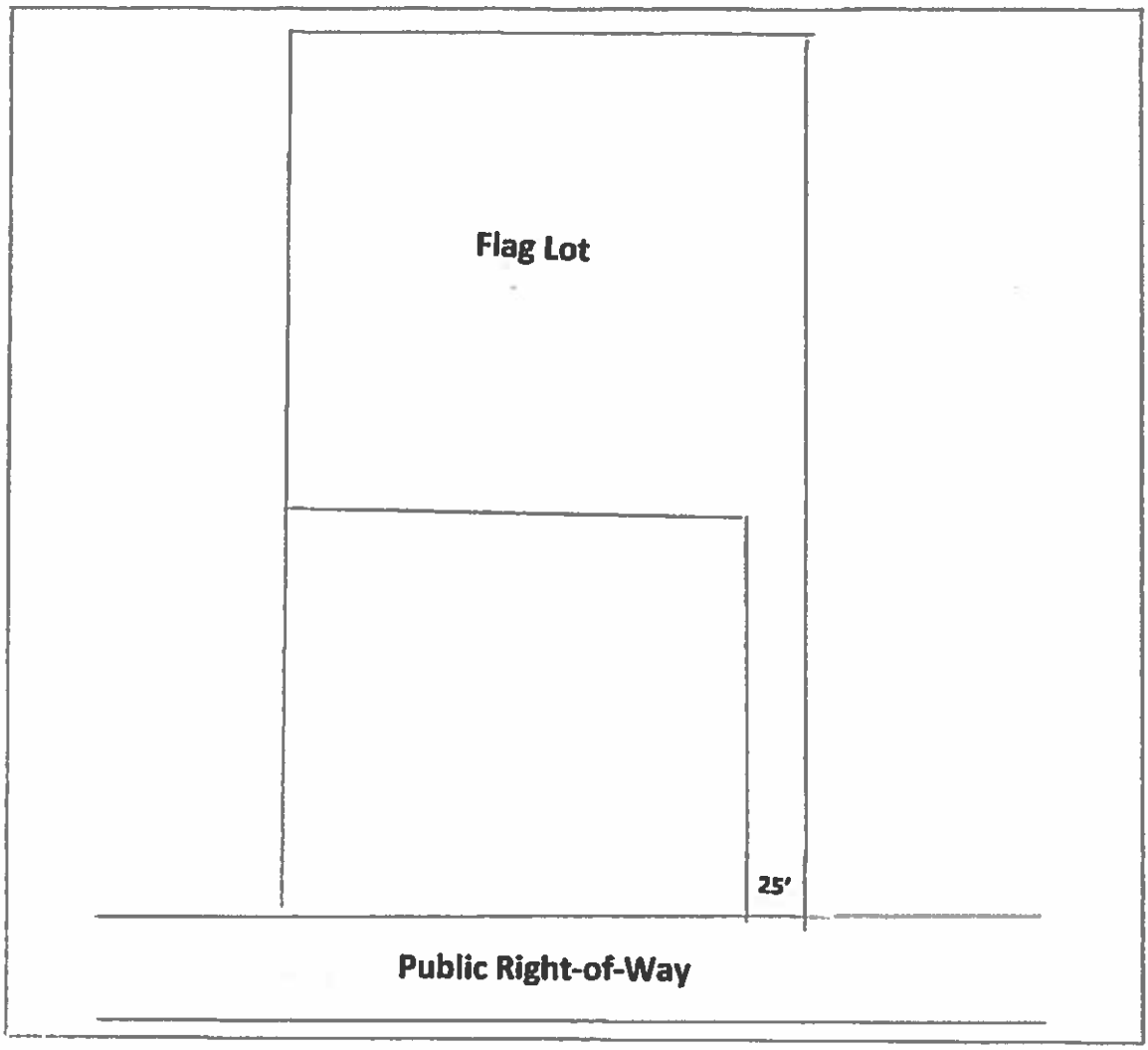
Flag Lot Road/Street: An easement containing a road or driveway that serves as the principal access for more than one property.

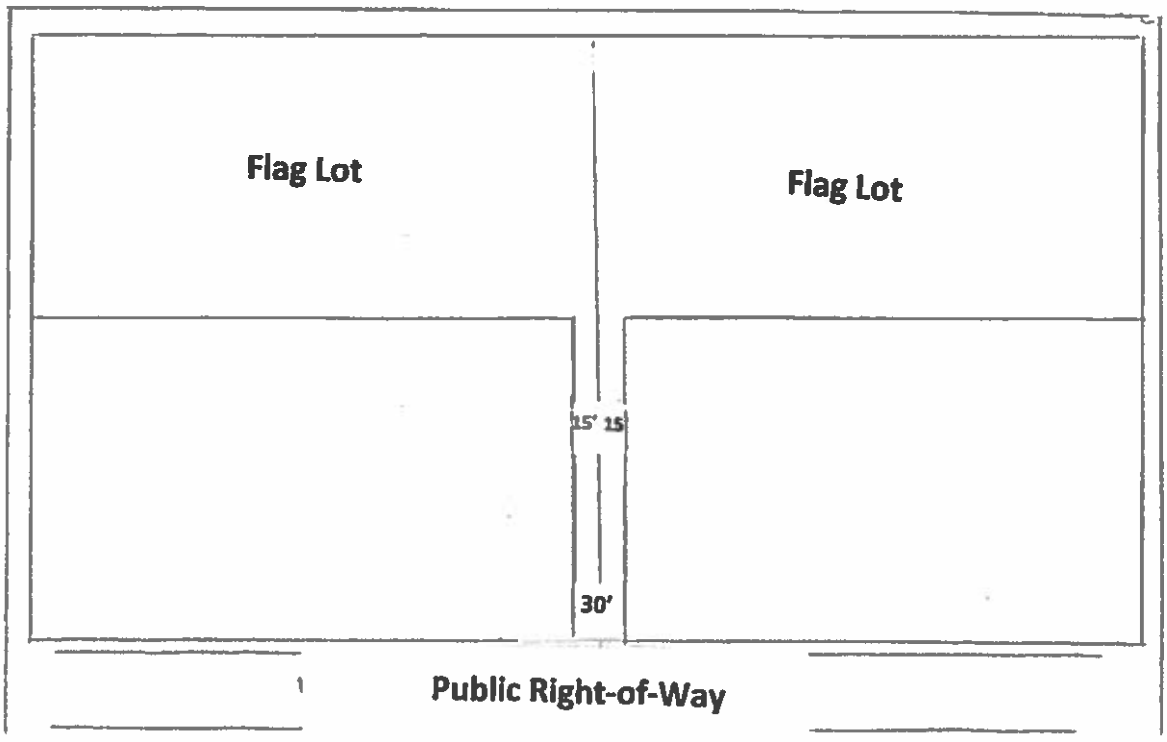
Flag Lot Creation
Deeded Access





Flag Lot Creation
Ownership Access





Solarize Greater Bangor – presentation by Karen Marysdaughter

Greater Bangor
Solarize

March 28, 2016

To the Members of the Hampden Infrastructure Committee,

Solarize is a collective purchasing program for homes, small businesses, farms, and community solar projects that was Initiated in Portland, Oregon in 2009. The Solarize process has spread across the country - currently in Maine there are projects in Freeport, Mid Maine, and Midcoast Maine.

The idea for a Solarize project for the Bangor area grew out of a "Solar Powering your Community" workshop sponsored by the cities of Bangor and Brewer and the Bangor Region Chamber of Commerce, held at the Cross Center in May of 2015. Dennis Marble was one of the attendees.

The goal of Solarize is to promote the installation of distributed solar power by bringing together interested home and business owners to contract for solar installation at a reduced rate. Purchasers have been shown to save up to 10% of their installation costs. Coupled with the 30% federal tax credit and other possible financing options, solar can become very affordable.

I am available to coordinate the project as a volunteer. I work part time at the Peace & Justice Center of Eastern Maine, and have experience as a community organizer (references listed in attached document). Three community members are currently serving as Advisors to the project: Josh Plourde of the Bangor City Council, Sharon Klein of the Economics Department at U Maine, and Rick Reardon, Chair of the Electrical & Automation Department at EMCC.

Municipal, regional, & state government entities have primarily lead the way on Solarize projects in other areas, including Maine. I believe a collaboration between a few local municipalities and the Eastern Maine Development District (EMDC) would be ideal for the Greater Bangor area.

On March 21, I presented Solarize to the Bangor City Finance Committee, which was very receptive. They will discuss it again at their next meeting in early April. I also met with Jeff Whelan of EMDC who is likely to come on board. I am in conversation with Mark Leonard, Town Manager of Veazie, and Geoff Gordon, town councillor in Orono.

The role of municipalities in the Solarize process would be to:

- Provide the community with a trusted emissary by adding their name as a partner.
- Assist with outreach to potential solar purchasers through established municipal networks and outreach tools.

We expect this project would easily piggyback on already existing municipal activities, and therefore not require much staff time. We are not requesting any funds.

I hope the Town of Hampden will join this effort to promote locally produced clean energy, installed by local workers, which will be of benefit to all ratepayers.

Sincerely,

Karen Marysdaughter
karenmd@myfairpoint.net
262-3706 (home) 930-5440 (cell)

Note: The state legislature and the PUC are currently considering changes to solar policy in Maine. I am following the process closely to see if and how it might affect a Solarize project in the area. I am attaching a white paper developed by the Public Advocates office on the matter.

Greater Bangor
Solarize

Additional Information for Municipalities, March, 2016
Submitted by Karen Marysdaughter

Greater Bangor Solarize Advisors (a few others may be added - suggestions welcome!):
Josh Plourde, Bangor City Council, Sharon Klein, University of Maine Department of Economics, & Rick Reardon, EMCC Electrical Technology program.

National Solarize Support: Department of Energy SunShot Initiative, Solarize Guidebook
Regional Solarize Support: Clean Energy States Alliance, CESA Solarize Guide

Potential partners:

- Bangor, Brewer, Hampden, Veazie, Orono municipalities
- Eastern Maine Development Corporation

References for my community organizing experience:
Malcolm Burson, Public Policy Advisor at the Conservation Law Foundation and former Maine DEP Associate Policy Director - mburson@clf.org
Dan Dixon, University of Maine Sustainability Coordinator - daniel.dixon@maine.edu
Vaughan Woodruff, owner, InSource Renewables, member ME Association of Building Energy Professionals, and Chair of their Committee on Renewable Energy - vwoodruff@insourcerenewables.com

Contacts for Maine Solarize projects that I have talked with, and are willing to talk to municipal contacts:
Solarize Freeport - Donna Larson, Town Planner, dlarson@freeportmaine.com
Solarize MidMaine - John Reuthe, consultant for City of Waterville, jreuthe@waterville-me.gov
Solarize Midcoast Maine - Jeff Kobrock & Bill Najpauer, Eastern Maine Development District, jkobrock@mceddme.org & bnajpauer@mceddme.org

Sample Solarize documents, including RFP's:
Available through SunShot Initiative, CESA, and the other Maine Solarize projects.

Draft timeline:
March - April, 2016 - Recruit partners
May - September - Do outreach and create list of interested home & business owners (Note: I am in conversation with Bangor Greendrinks about featuring Solarize at one of their summer events, and with Bangor Rotary about doing a presentation at one of their Breakfasts)
Mid May - Send out RFP
Late June - Select installer(s)
July - mid September - Solar 101 informational session(s)
September 30 - Deadline to enter into contract with Greater Bangor Solarize project

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State of Maine
Office of the Public Advocate

STRATEGEN
STRATEGIES FOR CLEAN ENERGY

A Ratepayer Focused Strategy for Distributed Solar in Maine

1. Introduction

This white paper offers a framework for sustainable growth in Maine's distributed solar energy sector that maximizes and fairly allocates benefits for all ratepayers. This approach builds on the Public Utilities Commission's recent "value of solar" study as well as lessons learned from other states. The policy proposed is specifically tailored to the state of Maine and offers innovative program design features intended to capitalize on the latest technological advances in the solar industry. The goals guiding this policy are the following:

- **Maximization of ratepayer benefits**: Establish competitive market structures that take advantage of advances in technology and declining costs to the benefit of all ratepayers.
- **Transparent allocation of costs and benefits:** Clearly link actual system benefits to transparent compensation mechanisms.
- **Opportunity for participation across all solar market segments:** Allow every market segment the opportunity to participate in the program on fair terms, from retail customer-paired residential solar, commercial and industrial resources, to standalone distribution-connected wholesale resources.
- **Market-based encouragement of technological innovation:** Allow data-based value adders to encourage technologies, combinations of technologies, and resource dispatch behaviors that are beneficial to the grid.
- **A fair balancing of stakeholder interests:** Each key stakeholder group receives equal consideration with a focus on win-win approaches (*e.g.* no one group left as a clear loser or winner).

While designed to present a coherent and holistic policy framework for state-wide adoption, this whitepaper is also intended to solicit stakeholder feedback.

1.1 High-level Policy Overview

This framework uses market forces to maximize value to all ratepayers, while fairly compensating solar adopters. The core attributes of the policy are as follows:

1. A cost-conscious alternative option to the current net metering based system.
2. Long-term compensation structures with a levelized cost of energy cap set initially at a level based on a value of solar analysis and above the current level of compensation offered by net metering.
3. Competitive bidding and capacity based step downs to drive actual program costs well below this initial level.

4. The potential (if the market can reach aggressive pricing targets) for 300 MWs of total new solar capacity by 2025, divided between three market segments – wholesale (150 MW), residential/commercial (100 MW), and industrial/community (50 MW).
5. Aggregation and procurement of solar resources to capture and monetize the value of solar generation in the relevant markets.

This whitepaper is divided into four sections, including this introduction (Section1). Section 2 provides an overview of Maine's existing net metering policy, its advantages and its shortcomings. Section 3 describes the results of the Maine Public Utilities Commission's value of solar study. Section 4 describes an alternative solar policy, rooted in the Commission's value of solar analysis and the goals described above. The Appendix include lessons learned in three states, California, Arizona, and Minnesota that informed the policy approach set forth here.

2. Overview of Net Energy Policy in Maine

Net metering, or net energy billing (NEM), is a billing mechanism that allows customers to receive credit for energy produced on-site that is sent back to the grid at the variable retail electricity rate. In Maine, this is currently the primary incentive available for distributed solar generation. Maine's two investor-owned utilities (IOUs) must offer net energy billing to their customers.

Net metering is popular with both customers and the solar industry. The primary benefit of net metering is its simplicity: to rate payers, developers, investors, and regulators.

However, the falling costs of solar, paired with rising retail electricity costs have driven increased adoption that has revealed revealing certain issues with the net metering platform. While it is not an issue yet in Maine, the scalability of NEM is under review in a number of states. At high penetrations of solar, the retail rates underpinning NEM may not send timely or appropriate price signals to solar adopters—in short, these customers might be compensated at rates that either do not reflect the value of the resource or the continuing decline in the installed cost of solar. While this may result in higher levels of solar installation, at increased penetration rates these issues may undermine the scalability of the policy.

Other issues inherent in the net metering incentive structure include:

- There is no certainty for net metering customers, whose rates may change in response to variations in wholesale prices and rate design. This lack of certainty can raise consumer protection concerns and may also impact the costs of financing.
- The economics of the underlying rate design may not make sense for larger commercial and industrial customers because their costs are largely recovered through demand charges.
- High rates of rapid adoption can lead to significant cost shifts to non-net metered customers. In other words, as net metered customers invest in self generation and reduce their electricity bills, non-net metered customers might pick up a greater share of the overall costs to deliver energy.
- There is little transparency regarding the relative costs/benefits and cost shifts.

- Discussion of rate design changes affecting all customers may be disproportionately impacted by a small, subset of solar customers and supporters.

For many of the reasons stated above, some states are revisiting traditional net metering or, at least, the underlying rate designs upon which it rests. In Maine, a Commission imposed check-in point of NEM occurs when 1% of peak system load is reached by NEM based systems. This target is on the verge of being reached for Central Maine Power in 2015.

3. The Maine Distributed Solar Valuation Study

Pursuant to the "Act to Support Solar Energy Development in Maine" (P.L Chapter 562; codified at 35-A M.R.S. §§ 3471-3473) ("Act"), the Maine Public Utilities Commission ("Commission") was required to develop a methodology for determining the value of distributed solar energy generation in the State. In March of 2015, after robust stakeholder input on all aspects of the methodology, the Commission published the "Maine Distributed Solar Valuation Study." The Study contained three major findings: (1) a methodology for estimating the cost and benefits of solar, (2) values for each cost and benefit (expressed as dollars per kilowatt hour) for the three utility territories, and (3) implementation options for encouraging solar adoption within the State's existing utility framework.

2.2 Methodology for Quantifying Costs and Benefits of Solar PV

The Public Utilities Commission and their consultants, with direction from the Legislature, identified ten categories of benefits and costs that provide a reasonable estimate of what distributed solar energy can provide to the state of Maine. Given the broad variation in output and location of solar facilities and the complexities of Maine's competitive market structure, the study made a number of sensible simplifying assumptions. One of the benefits of the policy proposal outlined below is the opportunity to refine these values based on changes in the relevant markets and data based on actual output of solar facilities in Maine. Figure 1 below highlights the elements considered in the cost/benefit calculation performed in the Commission's study.

Figure 1. Identified Cost and Benefits from Maine Distributed Solar Valuation Study

Component	Benefit/Cost Basis
Avoided Energy Cost	Hourly avoided wholesale market procurements, based on ISO New England day ahead locational marginal prices for the Maine Load Zone.
Avoided Generation Capacity and Reserve Capacity Costs	ISO New England Forward Capacity Market (FCM) auction clearing prices, followed by forecasted capacity prices by the ISO's consultant. For reserves, the ISO's reserve planning margin is applied.
Avoided Natural Gas Pipeline Costs	Not included, but left as a future placeholder if the cost of building future pipeline capacity is built into electricity prices.

Component	Benefit/Cost Basis
Solar Integration Costs	Operating reserves required to handle fluctuations in solar output, based on the New England Wind Integration Study (NEWIS) results.
Avoided Transmission Capacity Cost	ISO New England Regional Network Service (RNS) cost reductions caused by coincident solar peak load reduction.
Avoided Distribution Capacity Cost	Not included, but left as a future placeholder if the peak distribution loads begin to grow (requiring new capacity).
Voltage Regulation	Not included, but left as a future placeholder if new interconnections standards come into existence allowing inverters to control voltage and provide voltage ride-through to support the grid.
Net Social Cost of Carbon, SO2, and NOx	EPA estimates of social costs, reduced by compliance costs embedded in wholesale electricity prices.
Market Price Response	The temporary reduction in electricity and capacity prices resulting from reduced demand, based on the Avoided Energy Supply Costs in New England (AESC) study.
Avoided Fuel Price Uncertainty	The cost to eliminate long term price uncertainty in natural gas fuel displaced by solar.

Source: Adapted from Table ES-1. Benefit/Cost Bases from Maine Distributed Solar Valuation Study. Pg. 3. http://www.nrcm.org/wp-content/uploads/2015/03/MPUCValueofSolarReport.pdf

Specific monetary values for providing the benefits listed above were aggregated to each of the three utility service territories (*i.e.*, Central Maine Power – CMP; Bangor Hydro District - BHD, and Maine Public District - MPD). As shown in Figure 2 below, the 25-year levelized cost[1] of distributed solar in CMP's service territory was approximately $0.337/kWh. This estimate is broadly broken out by "Avoided Market Costs" and "Societal Benefits," valued at $0.138/kWh and $0.199/kWh respectively.

[1] Levelized cost represents the average total cost to build and operate the power-generating asset over its lifetime divided by the total power output of the asset over that lifetime. It is a metric often used to compare the price competitiveness of different generating technologies.

Figure 2. CMP Distributed Value – 25 Year Levelized ($ per kWh)

25 Year Levelized		Gross Value A ($/kWh)	× Load Match Factor B (%)	× Loss Savings Factor (1+C) (%)	= Distr. PV Value D ($/kWh)	
Energy Supply	Avoided Energy Cost	$0.076		6.2%	$0.081	Avoided Market Costs
	Avoided Gen. Capacity Cost	$0.068	54.4%	9.3%	$0.040	
	Avoided Res. Gen. Capacity Cost	$0.009	54.4%	9.3%	$0.005	$0.138
	Avoided NG Pipeline Cost					
	Solar Integration Cost	($0.005)		6.2%	($0.005)	
Transmission Delivery Service	Avoided Trans. Capacity Cost	$0.063	23.9%	9.3%	$0.016	
Distribution Delivery Service	Avoided Dist. Capacity Cost					
	Voltage Regulation					
Environmental	Net Social Cost of Carbon	$0.020		6.2%	$0.021	Societal Benefits
	Net Social Cost of SO_2	$0.058		6.2%	$0.062	$0.199
	Net Social Cost of NO_x	$0.012		6.2%	$0.013	
Other	Market Price Response	$0.062		6.2%	$0.066	
	Avoided Fuel Price Uncertainty	$0.035		6.2%	$0.037	
					$0.337	

Source: Norris, Benjamin; Grace, Robert; Perez, Dr. Richard; Rabago, Karl. Maine Distributed Solar Valuation Study. Prepared for the Maine Public Utilities Commission. Revised April 14, 2015. Pg. 50.
http://www.nrcm.org/wp-content/uploads/2015/03/MPUCValueofSolarReport.pdf

2.3 Avoided Market Costs and Societal Costs

The costs and benefits identified by the Commission fall into two primary categories: avoided market costs, and societal costs.

Avoided Market Costs
Avoided Market Costs are values that most directly affect electricity customer bills. These include the costs and benefits related to capital expenditures and operating expenses normally recouped by the utility in a customer's electricity bill. Distributed solar can offer ratepayer benefits by allowing for avoided costs including avoided energy purchases, avoided capacity purchases and avoided transmission upgrades. The system-wide reduction in electricity and capacity prices due to an overall reduction in energy demand (stemming from distributed solar generation) is a direct benefit as well; however, it applies to all ratepayers and is not directly monetizable. From a cost perspective, having more intermittent generation can lead to additional outlays associated with integration and voltage regulation.

Societal Costs
Societal benefits include environmental benefits in the form of avoided air pollution (CO_2, NO_x, SO_2) and avoidance of long-term fuel price uncertainty. These values are typically not included in the utility's ratemaking process or the supply portion of a customer's bill.

Relevant and Direct Values to Ratepayers
Projecting market-based costs and benefits out many years is not without some uncertainty but quantifying societal considerations presents a more challenging undertaking. To be clear, these benefits do exist and can be meaningful; however, the ultimate value may be harder to quantify, much less allocate. Establishing a compensation rate that is initially above direct market cost is one way of recognizing the environmental benefits of solar while not using ratepayer dollars to pay directly for non-market values that may be difficult to quantify. Alternatively if the cost-benefit analysis is clearly justified based upon the avoided market costs, and sufficiently compensates solar generators, the goal of maximizing ratepayer benefits can be achieved without paying directly for societal benefits.

4. A New Program Design

The policy presented here is based on the premise that there are now better ways than net metering to encourage solar adoption that send the right signals to developers and consumers, drive technological innovation, and allow utilities to more easily manage the increase in intermittent generation. This paper presents policy concepts for two important distributed solar market segments in Maine:

- **Customer-sited** (systems installed for residential and small commercial/industrial customers)
- **Wholesale** (systems installed on the utility side of the meter within the distribution system)

An aggregation entity, or "Solar Standard Buyer" (SSB) would interface with the customer sited market segment. Under the existing net metering construct, this role is currently assumed by the Standard Offer Provider or a customer's competitive electricity provider. Centralizing procurement with the SSB would

allow for a more efficient aggregation and sale of the different attributes solar energy can provide. The SSB would aggregate the energy, RECs, capacity value, and ancillary services potential and monetize these in the applicable markets. As stated previously, the underlying goal of the policy structure is to allow Maine ratepayers to capture the benefits of distributed solar energy while minimizing the costs and inequities experienced in other states.

For the wholesale market, the Commission would solicit competitive bids with the ultimate purchaser for these contracts being the Standard Solar Buyer. The amounts purchased would "prime the pump" for the Standard Solar Buyer's solar portfolio to ensure that the portfolio is of sufficient scale to efficiently monetize the benefits described above.

These policies combine the values of distributed solar calculated in the Commission's Study with the lessons and experience from other states. The idea is to set Maine on a course that allows the distributed solar market to grow and thrive and for incentives to align with market maturity. If successful, this policy could provide a platform for future innovation and development for all types distributed resources. Below is a more detailed discussion of each program and market specifics.

4.1 Customer-sited Solar Contract

For the customer-sited market segment, the compensation structure must be straight forward for the customer and subject to reasonable financing. [2] The core of the policy is the Customer-sited Solar Contract ("CSC"), a fixed-price, 20-year contract between the customer and the solar aggregator. Twenty years is a common term for solar equipment financing and well within adopter payback. The compensation rate for all market segments would be capped initially at the sum of the direct market derived values found in the Distributed Solar Valuation Study (see below). While societal values will not be compensated directly (for reasons stated above), if the solar industry thrives below the value cap then all Maine residents reap the financial and environmental benefits of solar. The following is the value stack associated with a 20-year levelized assessment:[3]

[2] Experience in other states shows that the ability to obtain reasonable financing for customer-sited solar is essential to ensuring access to customers across a range of income levels.

[3] Several potential market-based values were not included in the value stack presented by the Commission valuation study. These include avoided natural gas pipeline cost, avoided distribution capacity cost, and ancillary service benefits. These values can either be hard to quantity, de minimis, and/or highly locational. The CSC structure should not neglect solar's possible value in these areas and when appropriate, the compensation rate should reflect locational specific benefits. Nevertheless, the quantification of these benefits for compensation will have to be based on further study and market data from actual deployment or established on a project/location specific basis.

Figure 3. Levelized Value Stack (20 years) for Customer-sited Solar Contract - CMP

Value Component	CMP 20 Year LCOE ($/kWh)
Avoided Energy Cost	$0.078
Avoided Generation Capacity Cost	$0.039
Avoided Residential Generation Capacity Cost	$0.005
Solar Integration Cost	-$0.004
Avoided Trans. Capacity Cost	$0.016
Market Price Response	$0.069
Total	**$0.20**

Under the CSC, a solar aggregator would enter in a long-term, fixed contract with residential and small business customers that choose to host solar energy. The "payment" would be based on a per kWh rate that would appear as a monthly bill credit on the customer's bill (similar to Maine's existing NEM structure). The level of compensation would be capped at $0.20/kWh.

As stated above, centralizing procurement with the Solar Standard Buyer would allow for a more efficient aggregation and selling of the different attributes solar energy can provide. The role of the solar aggregator is also central to this policy framework. The solar aggregator, which could be a distribution utility or a Commission-designated third party, will be the counterparty for each CSC, and will be responsible for aggregating and monetizing the value of the different attributes Maine's solar generation fleet provides.

Both the payments to customers under a CSC and the revenues received through this aggregation and sale would be credited to all customers through T&D utilities' existing stranded cost mechanisms. The near-term premium, the difference between the amount recovered by the solar aggregator and the amount paid under a CSC, would be covered in the stranded cost adjustor on each customer's bill. Likewise, this would be the same account that would be credited when wholesale prices increase above the solar contract.

While the near-term compensation level for a CSC is higher than current retail and wholesale rates, non-participating customers will be better off than under net metering, because they will capture, monetize and retain substantially more of the benefits associated with distributed solar generation. Non-participating customers may even realize benefits over time if the revenue received from monetizing the benefits described above overtakes the fixed price of the solar contract. Because the first year level of compensation is capped based on the avoided market costs calculated in the Commission's value of solar, customers will not pay more than the best available estimate of the likely benefits to them, even if all of these benefits are not directly monetized by the Solar Buyer.

4.2 Market Based Step Downs

Common practice for large scale resource procurement is bilateral competitive bidding. For small PV systems on rooftops this is administratively burdensome and impractical for a variety of reasons. Nonetheless, there must be some mechanism to deliver ratepayer benefit as the solar industry scales and the technology matures. The appendix of this whitepaper contains two case studies of states that successfully implemented a capacity-based step down. This policy adopts that approach.

For residential and commercial customers, a declining trigger mechanism based on installed capacity would be established to automatically decrease the level of compensation for new customers entering into CSCs (not existing CSC customers). The capacity-based step down approach would reduce the CSC contract price by $0.01/kWh at each step until the incentive reaches wholesale electricity rates. As shown in Figures 4 and 5, the number of MWs available at each step increases with each consecutive step.

Figure 4. Incentive levels for a Capacity-based step down Approach

Step	MW in Step	Cumulative Installed Capacity	Step-specific Incentive Level (¢/kWh)
1	5	5	20
2	6	12	19
3	7	19	18
4	8	27	17
5	9	36	16
6	10	46	15
7	11	57	14
8	12	69	13
9	14	83	12
10	17	100	11 (or fixed wholesale rate)

The design of the program attempts to glide the industry to scale in a cost effective manner to 2025. The average compensation decline rate through the various steps is approximately 6.5%. This was designed to correlate to the average declines in solar energy system costs over the past 15 years.[4] The declines also more than cover the diminishing returns associated with increase solar penetration.

It is important to note that the rates above are for standard PV systems without locational adders or additional benefits that can be realized when combining PV with other technologies like controllable water heaters, energy storage, or with demand response programs. The Commission could create future

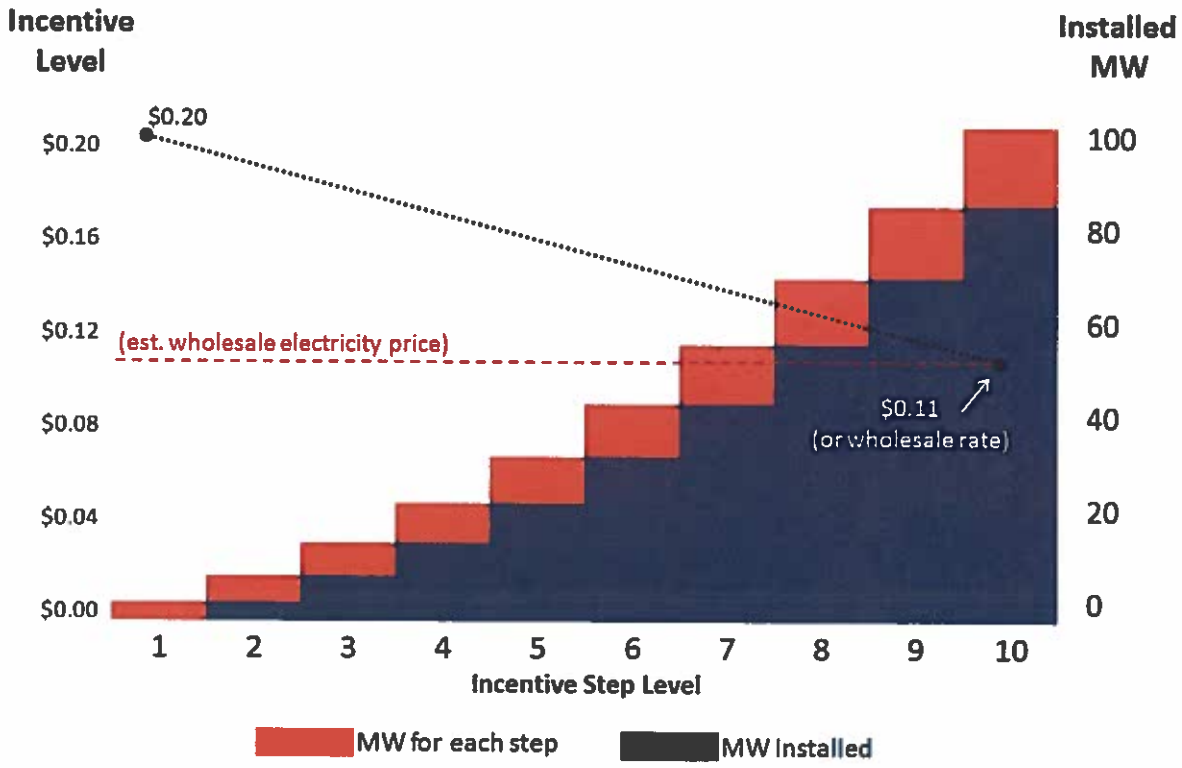
[4] Reported system prices of residential and commercial PV systems declined 6%–7% per year, on average, from 1998– 2013, and by 12%–15% from 2012–2013, depending on system size. Photovoltaic System Pricing Trends, 2014 Edition, US DOE SunShot: http://www.nrel.gov/docs/fy14osti/62558.pdf

set asides with higher compensation depending on market condition, capacity value, and other state objectives.

A 50 MW carve-out would be created for large commercial and industrial customers as well as community-based solar installations. The Commission would conduct a quarterly reverse auction for a specified level of installed capacity, where only the lowest project bids would be accepted. As with residential CSCs, the output of the facilities would be purchased by the solar aggregator. The cap of the compensation would be equivalent to the corresponding cap of the residential program at that time, though we anticipate that these bids would be considerably lower. This would allow large commercial and industrial customers, and residential customers without access to suitable locations on their own property, to participate in the distributed solar market, while using market-based mechanisms that capture the economies of scale associated with larger installations to drive down costs to all ratepayers.

Once the capacity-based step down mechanism is in place, on an annual basis, the Commission can revisit and adjust value of solar (VOS) levels according to changes in the energy market (*e.g.*, spikes in natural gas prices) or include adders to stimulate more adoption. Any potential changes in the VOS would not affect customers with existing long-term contracts. As such, there will be minimal impacts to the ability to finance projects. In the event that the Commission decreases the VOS below an existing step, the revised value will remain unchanged until a subsequent step is triggered with a lower value. If the Commission increases the VOS, it will need to stipulate how it declines by step.

Figure 5. Overview of Step-level Changes



4.3 Wholesale Distributed Generation Program

While the value of solar study informs a maximum cap of $0.20/kWh, the lower the compensation rate paid to solar generation facilities under this "value of solar" cap, the greater the benefits to Maine's non-participating ratepayers. Fortunately, the economies of scale that solar energy possesses can bring the price per kWh down quickly. Therefore, utility side of the meter wholesale solar within the distribution system may bring all the benefits of customer sited solar energy but at much lower cost. The output of these larger facilities would also serve to provide a critical mass of solar output to make aggregation and sale of the output from residential solar by the Solar Buyer more cost-effective.

Similar to the arrangement described above in Figure 5, developers of these 1-5 MW scale installations would be compensated at a fixed rate. Bi-annual competitive procurement by the transmission and distribution utilities would attempt to find the lowest priced but most impactful projects. The mechanism would be similar to that currently used by the Commission under 35-A M.R.S. § 3210-C to purchase energy and capacity from grid scale renewables.

4.4 Program Size

The program size for Maine was determined by studying California's CSI program (see Appendix) and Arizona's distributed generation set asides as a proxy. When California's CSI program started in 2007, the goal was to install approximately 1,940 MW of new solar generation for homes and small businesses. At the time, this represented about 3% of their total installed capacity.[5] Arizona's RPS based program set a DG solar target of 4.5% of load by 2025.[6] Maine's current generation capacity is approximately 4,500 MW.[7] In 2014, Maine's retail electricity load for its investor-owned T&D utilities was approximately 10,500 GWh. A 2025 DG target of 3.3% is between CA and AZ's target (trending more towards California) and would result in approximately 150 MW of new solar capacity. This would be complimented by 150 MWs for wholesale programs over five years. This establishes a total potential program size of 300 MW if the market succeeds on compensation rates closer to wholesale. By comparison, recent legislative proposals in Maine advanced by solar advocates targeted 200 MW of new solar installations by 2021.

A total of nearly 5% of load served by customer sited and wholesale solar resources is reasonable given the maturing state of the solar technology, especially if the program envisioned fully utilizes advanced inverters, optimal locations, and coupling with other technologies. Moreover, if the full 300 MW is deployed, a large portion of those MWs will be compensated at or near the future wholesale rate of energy. If this occurs, it would present a significant amount of benefits to ratepayers for years to come. A sensitivity analysis conducted in the Maine Distributed Solar Valuation Study for exactly 300 MW of distributed solar shows solar retains value even at higher penetrations.

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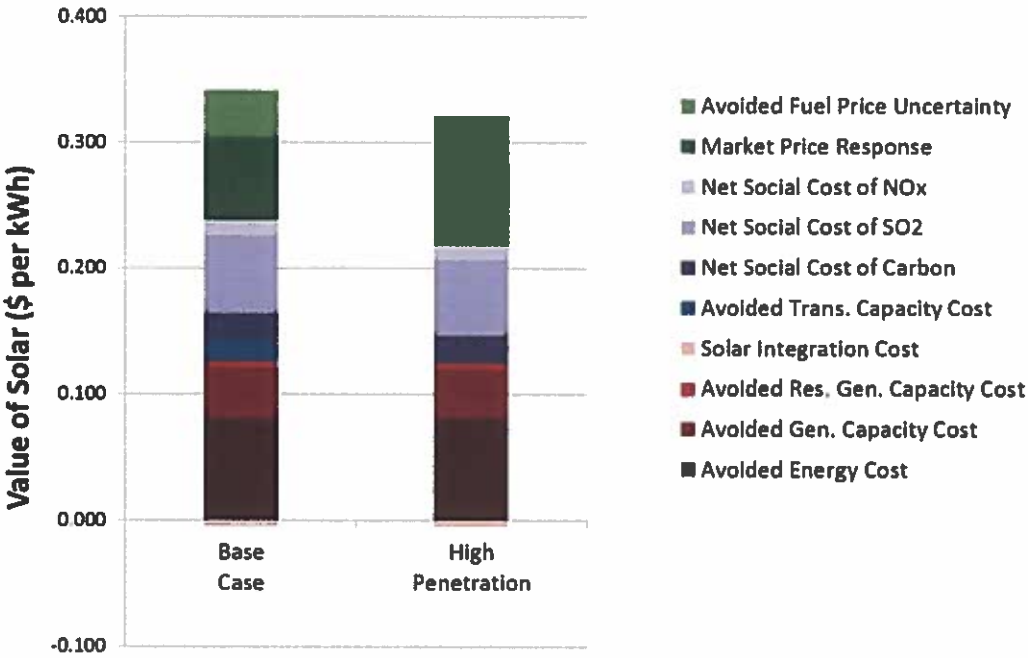
[5] California Energy Commission. Installed in-state Electric Generation Capacity by Fuel Type (MW). Energy Almanac. http://energyalmanac.ca.gov/electricity/electric_generation_capacity.html

[6] 2006, the Commission approved the Renewable Energy Standard and Tariff http://www.azcc.gov/divisions/utilities/electric/res.pdf?d=97

[7] U.S. Energy Information Administration. Maine Electricity Profile, 2012. http://www.eia.gov/electricity/state/maine/

Figure 7. 300 MW Sensitivity (CMP)[8]



4.5 Additional Program Features

Very few resources are able to be deployed in a modular fashion within the distribution system and on customer premises. Clearly, the various attributes of solar energy bring challenges and opportunities. However, correctly structured programs can balance the tradeoffs. Significant flexibility could be in built into both programs to allow for such things as locational adders, advanced inverters, renewable energy credit transfer, and differentiated rates based upon on-peak performance. The following list includes some additional features of the proposed solar programs:

Renewable Energy Credit ("REC") Transfer – With a portion of Maine's renewable resources able to deliver to other states and the unknown impact of the EPA Clean Power Plan, RECs can be valuable to the state. As such, program participants would be required to assign their RECs over to the distribution utility.

Advanced Inverters – New inverters have the capability to provide grid services and remotely update new software parameters to meet future needs. Program participants would be required to obtain advanced inverters. Further, if in the future the distribution utility seeks to control certain inverter functions remotely, they could do so as long as the impact on system production was less than 5%. The potential of having an aggregated fleet of distributed resources could yield many benefits to Maine's ratepayers.

[8] Norris, Benjamin; Grace, Robert; Perez, Dr. Richard; Rabago, Karl. Maine Distributed Solar Valuation Study. Prepared for the Maine Public Utilities Commission

Role for Other Technologies - This VOS program puts in place the infrastructure for other resources like combined heat and power (CHP), energy storage, and small-scale hydro to take advantage of once their respective benefits are studied. The general framework of market competition and long-term contracts can easily be swapped to different technologies. More importantly, the greater the diversity of resources, the better it is from a grid balancing perspective. The unique attributes of the different technologies available today bring system wide diversity and resiliency to the system.

Obligation of the Solar Standard Buyer and Distribution Utility – The Solar Standard Buyer plays a key role in these programs. It must actively seek ways to maximize the value of the solar resource and facilitate market adoption within the confines of the program. Likewise, distribution utilities have a responsibility to drive down the soft costs of distributed energy resources through streamlined interconnection and constructive participation in procurement programs. Subject to reasonable limitations, there could be a role for utility participation in the wholesale distributed generation program.

Yearly Program Revision – The Commission must have a yearly update and review process to ensure correct compensation and offer new ones to maximize solar's value. This can include price signals to encourage different production profiles, dispatchablity by encouraging pairing with onsite storage, or location-specific targeting. Again, new rates would only impact new subscribers. The market based step downs should alleviate any concern of over compensation, but a regular review may be needed, particularly in response to new occurrences in the market (e.g. gas prices volatility and new regulations).

Switching for Existing NEM Customers – Those customers that want to switch to the CSC program can do so as long as they separately meter their installation, assign over their RECs, and commit to installing an advanced inverter when replacement of their current inverter is needed. These customers would have no impact on the total program cap or step downs but a limited window would exist for switching. Those NEM customers who choose not to switch would continue in that program.

Tax Implications – The non-wholesale PV systems under this program would still be on the customer side of the meter and the kWh based compensation would not be a legal sale of energy. It would be a non-taxable bill credit. As under the current program, any excess credits at year end would be forfeited to the distribution utility.

Federal Policy Considerations – If the 30% Federal Investment Tax Credit sunsets, the current rate of CSC compensation for new sign-ups increases proportionally to make up for the loss as long as compensation rate is still below the $20 cent/kWh cap. The same treatment applies to any new tax implications that may arise for the proposed compensation structure.

End of Term Conditions – For all market segments, after the term of the contract is completed, the solar host would be paid at a different rate based on either a wholesale derivative or the then current value of solar rate.

4.6 Comparison to NEM

Figure 6 highlights the existing retail rates in Maine. The capacity-based step down approach would compensate the customer at rates that initially exceed retail rates. Not until Step 8 or 9 does the

estimated payment match current retail rates. A customer's preference at that point depends on future rates and rate design as well as risk tolerance. The CSC provides a fixed predictable rate with adders to encourage technology coupling. Net metering under a traditional rate design does not offer those features even if it is initially at a higher rate than the CSC.

Figure 6. Standard Offer Rates for Maine IOUs

(All values in expressed as ¢/kWh)

Investor-owned Utility	Delivery Rates	Residential /Small Commercial	Total*
CMP	4.19	6.45	10.73
Emera - Bangor Hydro Division	6.63	6.64	13.13
Emera - Maine Public Division	6.31	8.49	14.80
Average		**7.19**	**12.89**

Source: http://maine.gov/mpuc/electricity/standard_offer_rates/index.html
*The average retail rate for Medium Non-residential customers is approximately the same as residential (12.90 ¢) through the end of 2015.

Figure 7. Highlights the differences between the existing net metering framework and proposed program design

Existing NEM Structure	New CSC Program Design
Non transparent payment that can be either above or below the true market cost	Fully transparent compensation rate with customers being paid for the actual values they provide to the grid
More difficult for utility to manage grid as intermittent generation increases	Smart inverters are required.
Lack of easily updateable price signals	Transparent setting of prices on a regular basis
Non locational and technology coupling adders	Able to reward systems in beneficial locations and/or pairing with other technologies
Uncertain economics due to future rate changes	A 20-year contract at a fixed price makes solar financing easier and does not leave customers with unmet expectations if anticipated cost increases do not materialize.

Figure 8. Representative Utility Bill with Value of Solar Credit

CENTRAL MAINE POWER

Your CMP account number:
211-000-0000-001

Central Maine Power
customer assistance line
1-800-750-4000
To report a power outage: 1-800-696-1000

J.Q. CUSTOMER
12 ANYWHERE RD
ANYTOWN STATE
Service location

Billing date: 09/08/14 Read cycle: 09 Page: 001 of 003

Customer Meter Summary

Meter Number	Read Date	Prior Read date	Number of Days	Meter Reading	Prior Meter Reading	Total KWH
AB0000000000	09/04/14	08/07/14	30	81907	81169	738

Account Summary

Prior balance				$103.32
Payments received through 09/08/14 - thank you			$103.32-	
Balance forward				$0.00
New charges				
Electricity Delivery:	Central Maine Power (see details below)		$54.18	
Electricity Supply:	Standard Offer Service		$55.79	
Value of Solar Credit:	300 KWH @ $0.20/KWH			($60.00)
Total new charges				$49.97
Current Account Balance:				$49.97
You have agreed to pay before 10/04/14				$49.97

Central Maine Power Delivery Service Account Detail

Prior balance for Central Maine Power delivery					$40.85
Payments received - thank you				$40.85-	
Balance forward					$0.00
Current delivery charges					
Delivery Charges: Residential					
Delivery Service:	738 KWH				
	Up to	50 KWH @	$10.65	$43.53+	
	Other	50 KWH @	$0.063264		
Total current delivery charges	$43.53				
Central Maine Power account balance:					$43.53

Please see back page for important information

	Your electricity usage (in kilowatt hours)												
	09/14	08/14	07/14	06/14	05/14	04/14	03/14	02/14	01/14	12/13	11/13	10/13	09/13
Daily	25	23	24	25	23	22	23	21	19	28	25	23	21
Monthly	738	700	740	701	680	663	774	583	608	617	808	678	599

Please return this stub with payment to CMP. If applicable, supply payments are forwarded to the appropriate energy provider. Do not send cash or coins, and do not return with staples or paper clips. Refer to back to fill in information for mail address changes or to sign up for the Automatic Payment Option plan.

00018D

J.Q. CUSTOMER
12 ANYWHERE RD
ANYTOWN STATE

Central Maine Power Co.
P.O. Box 847810
Boston, MA 02284-7810

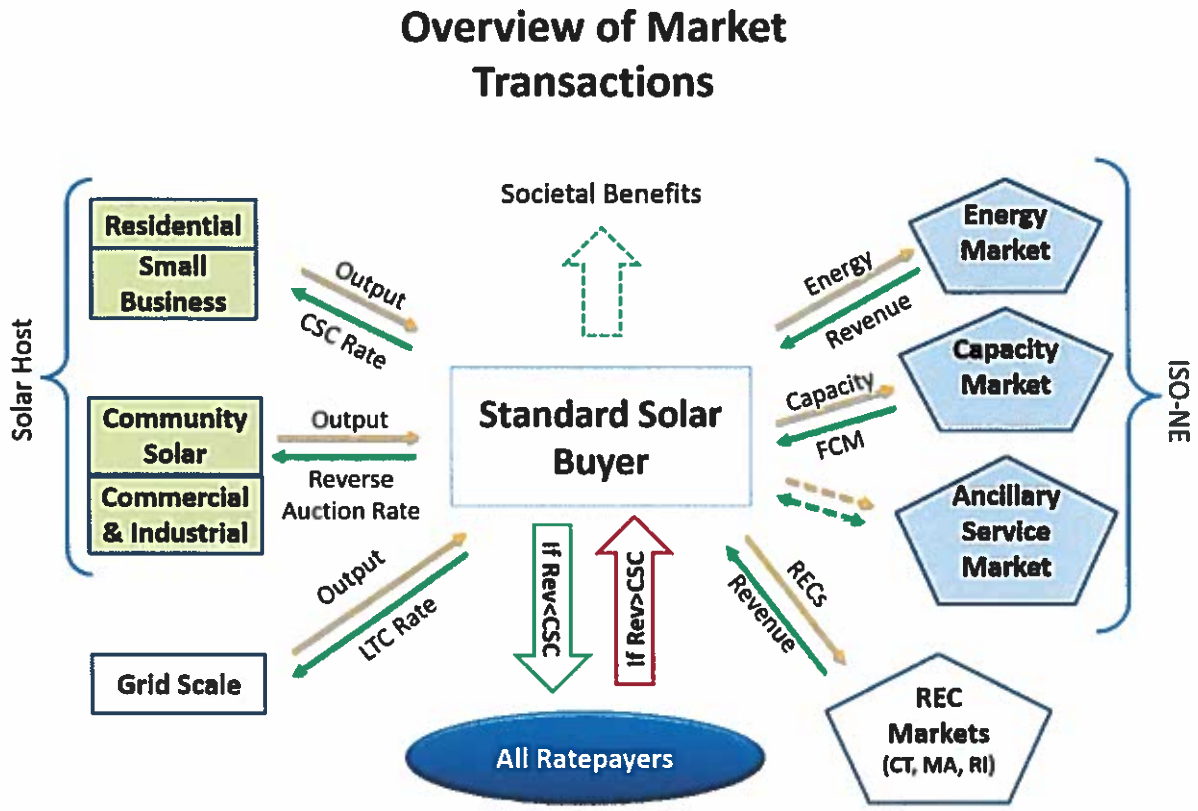
Your CMP account number:
211-000-0000-001

Please pay this amount:
$49.97
before 10/04/14 so you can avoid late charges

Please write amount paid:
$ _____
Thank you!

Please do not write below this line

Figure 9. Market Overview



5. Conclusion

This whitepaper proposes an alternative (not a replacement) to the existing net-metering program that supports the installation of additional solar while prioritizing ratepayer benefits and encouraging fairness, transparency, and market principles. Moreover, it proposes the opening of a new market segment, wholesale DG, which can deliver nearly the same benefits of rooftop solar but with significant discounts in cost. The policy vision presented here seeks to strike a balance between diverse stakeholder interests with a unique focus on producing benefits for all of Maine's ratepayers.

While many details will need to be defined, it is our hope that all parties can agree on the general goal of maximizing benefits while mitigating costs, and that this common guiding principle can foster further dialogue on strategic and sustainable solar deployment in Maine. Rather than simply adopt the policy conventions of other states, Maine can establish a policy tailored to its specific needs, goals, and market structure. Maine can build on the innovative, collaborative work in its Value of Solar Study to be the first restructured market to adopt a value of solar based compensation structure. It can also be one of the first states to aggregate DG resources to the benefit of all ratepayers. This approach also supports building a sustainable solar industry while benefiting all ratepayers. Finally, Maine can both recognize the value and benefits that distributed solar provides, while not necessarily paying for each and every

value. Instead, ratepayers can and should obtain these values at the lowest price possible, while still maintaining resource diversity and customer sited options. For this concept specifically, Maine can show a path forward that balances cost-based resource acquisition with value-based compensation in a way that is efficient, transparent, and fair.

Appendix

Lessons learned: California

In 2007, California launched the California Solar Initiative ("CSI") with the goal of installing 1,940 megawatts (MW) of solar in the three IOU service territories by the end of 2016 and transition the industry to a point where it can thrive without state subsidies. As of the April, 2015 the program has incentivized 1,893 MW of solar, nearly reaching its statutory goal 1.5 years ahead of schedule. The program is ratepayer funded and incentivizes residential and non-residential system between 1 kW and 1,000 kW and is widely regarded as one of the most successful solar incentive programs in the world. It has a unique structure that has allowed it to avoid the boom-bust cycles of other incentive programs that have cooled off or disappeared after feed-in tariffs were retroactively rolled back, incentive programs changed, or renewable energy credit markets collapsed. As the CSI program draws to a close, the market is not cooling off – developers are installing projects in record numbers.

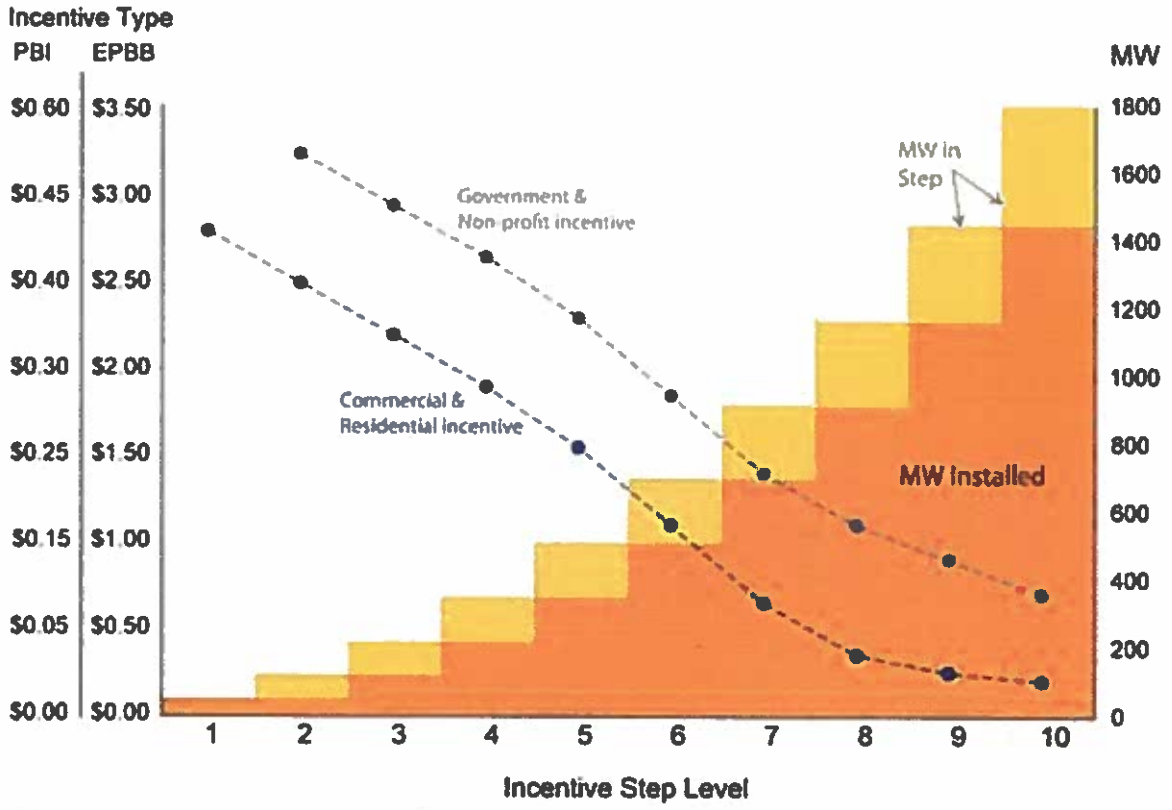
Much of the success of the CSI program can be attributed to its capacity-based declinations in incentive levels. As installed capacity targets are reached, incentive levels drop down accordingly. Under this approach, instead of relying on legislators or having funding allocated based on calendar year or some other arbitrary time frame, the market dictates incentive levels. In addition, competition prevents developers from artificially increasing their rates in order to capture a portion of the incentive –virtually all of it gets passed through to the customer.[9]

The CSI pays solar customers through two types of incentives, (1) Expected Performance-Based Buydown ("EPBB") and (2) a Performance-Based Incentive ("PBI"). The EPBB is an upfront incentive available only for systems <50 kW and is paid on a $/W basis. The PBI is applied to systems >50 kW and pays customers based on actual measured performance of over 5 years. The incentive is paid on a fixed dollar per kilowatt-hour ($/kWh) of generation.

Figure **A-1** highlights how CSI incentives step down as capacity increases. Once the capacity for a given step (shown in yellow) is reached, the program simply transitions to the next step and incentives shift accordingly. With every sequential step, the capacity has a larger. Systems for government or non-profit customers are on a separate track.

[9] Dong, C.G.; Wiser, R.; Rai, V. 2014. Incentive Pass-through for Residential Solar Systems in California. Berkeley, CA: Lawrence Berkeley National Laboratory. http://emp.lbl.gov/sites/all/files/lbnl-6927e.pdf

Figure A-1. The CSI Capacity-based Incentive Step Down



PBI: Performance Based Incentive, paid over 5 years, in $ / kWh
EPBB: Expected Performance Based Buydown, paid upfront, in $ / W

Lessons learned: Minnesota

In March, 2014, Minnesota became the first state in the nation to approve a Value of Solar tariff. The legislation allowed the utilities to voluntarily implement the policy - in lieu of the existing net metering program. Below are key characteristics of MN VOS policy[10,11]:

- **Size limitations:** <1MW (and limited to 120% of the customer's load)
- **Compensation decoupled from retail electricity price:** The customer is billed for total electricity usage at the retail rate. Their bill is credited at the VOS rate based on their solar system's production.
- **Value:**

[10] Minnesota Value of Solar: Methodology. Minnesota Department of Commerce, Division of Energy Resources. April, 2014. http://mn.gov/commerce/energy/images/DRAFT-MN-VOS-Methodology-111913.pdf
[11] Cory, Karlynn. Minnesota Values Solar Generation with New "Value of Solar" Tariff. October 3, 2014. NREL (blog). https://www.nrel.gov/tech_deployment/state_local_governments/blog/vos-series_minnesota

  - The VOS is expressed as the levelized value over 25 year, expressed in $/kWh.
  - Reflects values to the utility, its customers, and to society.
  - VOS rate is updated annually, using transparent inputs and calculations.
- **Tariff:** Intended to reflect the displacement of existing values - it is not an incentive.

The VOS rate, established by the MN Department of Commerce, is currently higher than retail electricity costs. Therefore, no MN utility has adopted the policy. However, as retail prices increase – or as the VOS decreases - and ultimately eclipses the VOS rate, it is likely that the utilities will opt to apply to the MN Public Utilities Commission to enact the VOS in the place of net metering. By establishing a transparent market price, the VOS addresses concerns about having non-solar customers subsidizing solar customers. It remains to be seen, however, whether the VOS is compatible with 3rd party business models.

Lessons Learned: Arizona

In 2012 the Arizona Corporation Commission instated a quarterly trigger decline mechanism for residential PV incentives. This was in response to boom and bust cycles of incentives that hurt the industry and led to ratepayers over paying for incentives. Perhaps the most intricate of any state step down, the exact amount of the incentive decline related to how soon a capacity target was reached. This produced a gradual step down sensitive to panel prices and financial innovation.

Figure A-2. Rules for Arizona's Quarterly Declination Mechanism

Date of Trigger	Reservations to Activate Trigger	Rules for Incentive Reductions
On or before March 31, 2012	25%	If the trigger is activated there will be a $0.15/Watt incentive decline.
On or before June 30, 2012	50%	If the trigger is activated within 30 days of the last trigger activation there will be a $0.20/Watt incentive decline, 31-60 days a $0.10/Watt incentive decline, over 60 days a $0.05/Watt incentive decline.
On or before September 30, 2012	75%	If the trigger is activated within 30 days of the last trigger activation there will be a $0.20/Watt incentive decline, 31-60 days a $0.10/Watt incentive decline, over 60 days a $0.05/Watt incentive decline.
On or before November 1, 2012	90%	If the existing incentive is greater than $0.35 per Watt, the incentive will reduce to $0.20 per Watt. If the existing incentive is less than or equal to $0.35 the incentive will decline to $0.10 per Watt.

Due to this structure, 2012 saw a record year for residential installs in Arizona compared to years past. The rooftop solar industry was able to scale and ratepayers saved money. This set the stage for the industry to move off of direct incentives the following year. NREL in a report on "value of solar tariffs stated the following:

> "It is only within the last two years that solar in portions of certain states (e.g., Hawaii, California, and Arizona) has moved from pre-economic to grid-competitive, allowing for the reduction or elimination of state and utility incentives while still maintaining high solar growth rates. Utilities in those three states account for 65% of the national distributed solar market capacity in MW (Makhyoun et al. 2014)."[12]

[12] "Value of Solar: Program Design and Implementation Considerations" National Renewable Energy Laboratory (NREL) http://www.nrel.gov/docs/fy15osti/62361.pdf

TOWN OF HAMPDEN

Draft

The Town of Hampden Hereby Ordains
Proposed Amendments to the Fees Ordinance

Deletions are ~~Strikethrough~~ Additions Double Underlined

TOWN OF HAMPDEN, MAINE
HARBOR ORDINANCE

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ADOPTED: Hampden Town Council: August 20, 1984
Effective date: September 19, 1984

AMENDED: Hampden Town Council April 20, 1992
Effective: May 20, 1992

AMENDED: Hampden Town Council November 17, 2003
Effective: December 17, 2003

AMENDED: Hampden Town Council [DATE], 2016
Effective: [DATE], 2016

TOWN OF HAMPDEN, MAINE
HARBOR ORDINANCE

ARTICLE I
BOUNDARIES OF JURISDICTION

The rules and regulations contained herein shall govern water recreation, navigation, and all boating activities on the Penobscot River and its estuarine tributaries, extending from the Bangor City Line to the Winterport Town Line, to the thread of the river channel. The Hampden Marina area shall include that area on Turtle Head extending from the property line between land now or formerly owned by the City of Bangor and land now or formerly owned by the Lane Construction Corporation, southwest to a point 100 feet downriver from Turtle Head Point, extending to the thread of the river; also including Turtle Head Cove, from Turtle Head to the head of tide.

ARTICLE II
HARBOR MASTER

The Harbor Master shall be appointed annually by the Town Council and shall have the authority to enforce the rules and regulations of the Statutes of the State of Maine relating to the operation of vessels, as contained in Title 38 M.R.S.A., Chapter 1, and other rules and regulations as contained herein.

ARTICLE III
CHANNELS

The ~~Main~~ main channel at the Hampden Marina shall extend in a southerly direction from the boat launching ramps approximately 400 feet to the main channel of the Penobscot River, to be marked by buoys from May 15th to October 15th of each year. The channel shall be kept clear for the passage of boats to the public landing float and the boat launching ramps.

There shall be no anchoring allowed within 100 feet of the channel lines, and tenders or dinghies shall not be allowed to encroach into the area of the channel outlined by the channel buoys.

~~ARTICLE IV~~
~~FLOATS~~

~~A landing float will be maintained at the Hampden Marina by the Town for the use of the public. No persons shall leave a vessel tied to the face of the public float for a period of longer than one hour without the direct permission of the Harbor Master, with the exception of the rowboats, canoes, dinghies, or other un-powered boats, which may be tied to the ends or rear of the float after registration with the Harbor Master. Any person who leaves a vessel moored to the public float beyond the allotted time shall be fined for each violation in the sum of not less than $25.00 nor more than $100.00 to be recovered on complaint by the Harbor Master before the District Court. Each day shall be considered a separate violation.~~

~~Boats over 15 feet in length shall not be allowed to be tied up in the dinghy area. — *(Amended 4/20/92)*~~

~~Overnight tie-up to the public float will be allowed only upon permission from the Harbor Master, with payment of a fee in accordance with the Town of Hampden Fees Ordinance. *(Amended 11-17-03)*~~

ARTICLE ~~V~~ VI
LAUNCHING RAMPS

The Harbor Master shall have jurisdiction over the public boat launching ramps. Boats and cradles shall not be left on the ramps at any time. Vehicles, trailers, and boats shall be parked or stored in designated areas only. No vehicles or boats shall be left unattended on the approach to the launch ramps.

No unattended tie-up of boats to the grounding floats will be allowed, nor will boats be allowed to tie up in any manner so as to interfere with the launching or retrieval of boats on the launch ramps. Any violation ~~will be subject to the same penalties as described above for the public float.~~ shall be fined for each violation in the sum of not less than $25.00 nor more than $100.00 to be recovered on complaint by the Harbor Master before the District Court. Each day shall be considered a separate violation.

ARTICLE VII
MOORINGS

A mooring area shall be established on the upriver side of the entrance channel to the boat launch ramps, extending upriver to an extension of the property line between land now or formerly owned by the City of Bangor and land now or formerly owned by the Lane Construction Corporation. The maximum offshore distance for mooring shall be 350 feet from the mean high water line.

Installation of private moorings will be subject to the approval of the Harbor Master upon payment of an annual fee in accordance with the Town of Hampden Fees Ordinance. ***(Amended: 11-17-03)***

Said moorings shall be placed only in the precise areas designated by the Harbor Master. Residents of the Town of Hampden and the City of Bangor will be given priority with regard to the placement of private moorings. ***(Amended 4/20/92)***

The Harbor Master shall register all moorings with the following information:

1. Name and address of the owner, and number of the vessel.
2. Location of the mooring.
3. Size and type of the mooring and chain.

All moorings shall be registered at the Town Office each year before May 1st. Each private mooring shall be assigned a number, which shall be displayed on the buoy in permanent letters at least 2½ inches high.

The maximum mooring scope from staple to bit shall be forty feet. The minimum mooring weight shall be one ton for stone or other bulk moorings, or the equivalent for swing-around moorings. The minimum bottom chain size shall be 3/8 inch. In addition to the foregoing specifications for moorings, the Harbor Master may enforce additional written specifications, to be conveniently available to the public upon request. ***(Amended: 4-20-92)***

No changes in the location of moorings will be allowed without the approval of the Harbor Master. Moorings not registered by May 1st of each year shall become the property of the Town. Ownerships of private moorings are not transferable without the written permission of the Harbor Master. Moorings shall be inspected at least once every five years at the owner's expense, either by pulling or by underwater investigation. If, upon inspection, the mooring is considered by the Harbor Master to be unsafe, then it shall be repaired or replaced within a period of ten days at the expense of the owner.

Whoever violates any of the above conditions pertaining to moorings shall be liable upon complaint of the Harbor Master in the District Court for a fine of not less than $25.00 nor more than $100.00. Whoever willfully destroys any channel marker or buoy shall be liable upon complaint of the Harbor Master for a fine of not less than $100.00 nor more than $200.00

The anchoring of boats will not be allowed within the limits of the entrance channel or the mooring area. All boats shall be anchored downriver from the mooring area. The lower limit of the anchorage area shall be 100 feet downriver from Turtle Head. *(Amended: 4-20-92)*

Whoever anchors a boat in an improper location or manner shall be liable upon complaint of the Harbor Master in District Court for a fine of not less than $25.00 nor more than $100.00.

ARTICLE VII
GENERAL REGULATIONS

Any use of the public facilities mentioned above, i.e., ~~public floats,~~ boat launching ramps, parking areas, moorings and ground floats shall be at the user's risk, and the Town of Hampden will not be liable for any damage or injury resulting from the use of said facilities. Boats and/or trailers will not be stored on the premises within the parking area for more than twenty-four (24) hours without the permission of the Harbor Master. *(Amended: 4-20-92)*

~~A Harbor Committee shall be appointed each year by the Town Council, consisting of five members, each serving three year terms. The initial Committee will have two members serving three years, two members serving two years, and one member serving one year. All new appointments will be for three year terms. The Town Manager and the Harbor Master shall serve as Ex Officio members. The Harbor Committee shall be composed of those persons having an interest in and knowledge of recreational boating, and those persons having a direct connection with the ownership and/or operation of facilities in the Turtle Head area.~~

~~The duties of the Committee shall include:~~

~~1. The general surveillance of the operation and maintenance of the Marina area, including shore side activities,~~

~~2. The establishment and the annual review of fees for the use of the public facilities,~~

~~3. The planning for further development and improvement of the Marina facilities, and~~

~~4. The planning and review of boating activities within the overall harbor jurisdiction.~~

~~The Committee shall file an annual report with the Town Council. The Harbor Committee shall be advisory in nature and any complaints, recommendations or requests shall be addressed to the Town Manager for further action.~~

The Harbor Master shall be responsible for carrying out the provisions of this Ordinance as well as the provisions of Title 38 M.R.S.A., Chapter 1. He shall keep a log of all activities within the harbor area, and shall collect all fees as hereinafter established to be turned over daily to the Town Clerk. The Harbor Master shall be subject to the authority and direction of the Town Manager.

ARTICLE VIII
NUISANCE AND POLLUTION

No watercraft shall be used or operated within the harbor area so as to cause danger, annoyance, disturbance or inconvenience to the public. Motorboats without suitable mufflers will be prohibited.

All watercraft operating within the Hampden Marina limits shall maintain a speed of not more than five knots.

No person or vessel shall dump or dispose of any refuse or garbage upon the shore of the Penobscot Rover or its tributaries, or upon the waters of the river. No vessel shall deposit, throw, sweep or cause to be deposited or swept into the waters of the Penobscot River or its tributaries any gasoline, oil, fuel or sewage, or any floating objects which may cause obstruction or danger to navigation.

Any master or owner of any vessel or boat, or any other person who shall violate any of the provisions of any rules or regulation contained herein to which a specific penalty is not annexed or otherwise provided by law, shall forfeit and pay a fine of not less than $25.00 nor more than $100.00, to be recovered upon complaint by the Harbor Master before District Court.

March 26th, 2016

Dear Mr. Bennett,

My mother, Barbara McKay, owns the property at 23 Cottage St. in Hampden. For many years my developmentally disabled brother, Eric McVay, has been living there with support from family nearby as well as some formal support services. My family would like to respectfully request that the property be rezoned from Residential A to Village Commercial 2 in order that we have increased options moving forward for Eric. We really wish to retain his level of independence as the family ages and our resources become more limited. This property is important for Eric as it is in a safe area and within walking distance of a store and a bus route. Thank you for your consideration.

Tonya McVay

Tonya McVay

299-5026, 23 Lindsey Way Hampden

Barbara McKay

Barbara McKay

327-1123, 365 Reeves Road Bradford

23 Cottage St