

Barnstable, Massachusetts



Photo: Sandy Neck Lighthouse,
Barnstable, MA

Barnstable

CASE STUDY

**SOLAR
OUTREACH**



PARTNERSHIP

SOLAR ENERGY ON THE CAPE: INNOVATION IN BARNSTABLE, MASSACHUSETTS

Barnstable, the county seat of Barnstable County, is the largest town on Cape Cod. Bordered by Cape Cod Bay on the north, Nantucket Sound on the south, Sandwich and Mashpee on the west, and Yarmouth on the east, the town has 100 miles of shoreline and a total area of 76.3 square miles, which encompass seven unincorporated villages and numerous freshwater ponds. Barnstable is a major transportation hub for the Cape Cod region and the islands of Nantucket and Martha's Vineyard.¹ The year-round population is nearly 45,000; during summer months, it grows to over 146,000.²

Barnstable has a council-manager form of government and is governed by a town manager and town council. Subject to the legislative decisions made by the town council, administrative authority is vested in the town manager, who supervises and directs the administration of all municipal departments except for the public schools and the municipal airport.

Barnstable's Renewable Energy Commission is a permanent nine-member volunteer commission that is appointed by the town council for three-year terms and serves the council and town manager in an advisory capacity. The commission studies and recommends

As reported by Environment America, Barnstable has the most total solar energy capacity and the third-highest solar energy installations of any municipality in the Commonwealth of Massachusetts.

Source: Environment America, "Falmouth, Cape Cod, Leading Massachusetts in Solar Development," news release, July 17, 2012, <http://www.environmentamerica.org/news/mae/falmouth-cape-cod-leading-massachusetts-solar-development>.

City Profile

- Form of Government: Council-manager
- Population: 45,000 (year round)/146,000 (summer)
- Geographic Area: 76.3 square miles
- Number of local government employees: 2,500
- Major Departments: Police, public works, administrative services.
- Annual Budget: 143,461,014
- Type of Electric Utility: Cooperative—Cape and Vineyard Electric Cooperative

viable methods for achieving energy conservation and using renewable sources of energy; undertakes and annually updates a town-wide energy audit and inventory of energy and greenhouse gas (GHG) emissions; and drafts and regularly updates an energy and climate action plan for the town, setting goals for energy and GHG emission reductions.³

The town's fiscal year 2014 General Fund operating budget was \$170 million.⁴ The largest expenditures were for education, public safety, and public works. The town employs approximately 2,500 full- and part-time and seasonal employees.⁵

Leadership from the State

The Commonwealth of Massachusetts is a national leader in energy efficiency and renewable energy. According to the Solar Energy Industries Association, Massachusetts has more than 299 solar companies employing 8,400 workers, which is fourth in total number of solar jobs and eighth in per capita solar jobs

“Over the past two years this [clean energy] industry has grown 24 percent, to more than 5,500 clean energy firms employing nearly 80,000 clean energy workers.”

— Governor Deval Patrick

Source: Deval Patrick, “Guest View: Clean Energy Jobs Touch Every Region,” *New Bedford Standard Times*, October 25, 2013, <http://www.southcoasttoday.com/apps/pbcs.dll/article?AID=/20131025/OPINION/310250303> (accessed October 26, 2014).

in the United States.⁶ Governor Deval Patrick set a goal of producing 250 megawatts (MW) of solar energy by 2017, which was achieved four years early—in 2013. In response to this achievement, he then set a more ambitious statewide goal of 1,600 total MW of solar energy by 2020.⁷ The Commonwealth has established the legal infrastructure, as well as policies and programs, to support local governments, businesses, and residents in reducing energy consumption and in developing and using clean, renewable energy. Governor Patrick views renewable energy and energy efficiency not only as critical to reducing GHG emissions and addressing climate change but also as economic engines for Massachusetts’s economy.

In August 2012, Governor Patrick signed S. 2395, An Act Relative to Competitively Priced Electricity in the Commonwealth, to facilitate expanded renewable energy generation in Massachusetts. This law requires competitively bid long-term contracts between utilities and renewable energy companies to meet 7 percent of consumer demand. Such contracts have been used in Barnstable, as described in the discussion of the Cape & Vineyard Electric Cooperative below. The law also doubles the allotment for net metering to 3 percent for public and 3 percent for private projects, for a total of 6 percent of total statewide electricity consumption. As of March 2014, most of the public allotments had been met,⁸ and two bills were under consideration in the Massachusetts General Court to address the limit imposed by the net metering cap.⁹ According to observers, the bill that sought to extend the net metering cap and to “encourage the sustained and orderly development of customer-sited renewable generation sources,”¹⁰ sought to fix the price of electricity through solar energy while hedging against the inevitable price increases of natural gas.¹¹ In August 2014, the legislature passed a bill which increased the net metering caps slightly and created a task force to study the

state’s incentive programs and net metering policies.¹²

Two statewide programs that support the governor’s energy goals are the Executive Office of Energy and Environmental Affairs’ Green Communities and Solarize Mass.

- **Green Communities** provides participating municipalities with grant funding to support the development of energy efficiency and renewable energy projects in exchange for meeting specific criteria:

1. Provide as-of-right siting¹³ in designated locations for renewable/alternative energy generation, research and development, or manufacturing facilities
2. Expedite the application and permit process for as-of-right energy facilities¹⁴
3. Establish an energy use baseline and develop a plan to reduce energy use by 20 percent within five years
4. Purchase only fuel-efficient vehicles
5. Set requirements to minimize life-cycle energy costs for new construction.

Barnstable and many other Cape Cod towns have sought and obtained this designation.

- **Solarize Mass**, a partnership between the Massachusetts Clean Energy Center and the Massachusetts Department of Energy Resources (DOER), promotes the development of small-scale solar electricity systems by providing incentives to homeowners and offering group purchasing of residential systems. To date, the Solarize Mass program has supported 9 MW of residential solar projects in thirty-three towns.¹⁵ While Barnstable has applied for this program twice, it has not been accepted. As a result, local officials have sought to facilitate residential solar projects independently and without state support.¹⁶

Regional Renewable Energy Infrastructure

Two organizations in the Cape Cod region have been central to the success of renewable energy projects—Cape Light Compact and the Cape & Vineyard Electric Cooperative, Inc. (CVEC).

- **Cape Light Compact**, an energy efficiency administrator and municipal electricity aggregator, was established in 1997. Organized through a

formal intergovernmental agreement signed by twenty-one member towns in Cape Cod and Martha's Vineyard, as well as by Barnstable and Dukes Counties, it provides electricity to businesses and residents throughout Cape Cod and Martha's Vineyard, including nearly 25,000 homes and businesses in the town of Barnstable. Cape Light Compact is funded by a monthly customer "energy conservation" charge of \$0.0025 per kilowatt hour (kWh) used that appears on customers' electric bills. As part of its three-year energy efficiency plan mandated by the [Green Communities Act of 2008](#), Cape Light Compact has directed energy efficiency investments in the residential and commercial sectors, including heating and cooling equipment, multifamily retrofits, ENERGY STAR lighting and appliances, low-income residential new construction, and single and multifamily retrofits. Also under its energy efficiency plan, Cape Light Compact leads education and outreach to promote understanding and behavioral change to all residents within its service area.¹⁷

- The [Cape & Vineyard Electric Cooperative, Inc. \(CVEC\)](#) was founded in 2007 as the result of a strategic planning process led by Cape Light Compact to determine how to develop electric generation projects and enter into long-term power purchase agreements (PPAs), which Cape Light Compact and member towns could not do. The founding members of CVEC were Cape Light Compact, the town of Barnstable, and Barnstable County. Today, twenty towns, as well as Dukes and Barnstable Counties, are members of CVEC. CVEC designs, finances, and operates renewable energy projects, which benefit its local government members by improving electric service and reliability and acquiring the best rates for electricity supply for consumers. In addition, the financial benefits of renewable energy projects developed by CVEC in Barnstable and other member jurisdictions are returned to the local governments in which the projects are located.

Sustainability Initiatives in Barnstable

The town of Barnstable has a comprehensive sustainability program that addresses not only renewable energy but also energy efficiency, electric-vehicle charging stations, recycling and waste reduction, land preservation, protection of Nantucket Sound and its resources, sustainable development, and other ele-

Energy Education by Cape Light Compact

- Energy Carnival for all 5th-grade students
- Teacher workshops on the science of energy
- Workshop on climate change and energy sources
- A graduate-level course on wind energy and technology for the classroom

Source: Sarah Colvin Nelson, ed., *Town of Barnstable Fiscal Year Annual Report, 2012 An Eventful Year*, 111, http://www.townofbarnstable.us/AnnualReports/AR_WEB_2012_2.pdf.

ments. As a founding member of the CVEC, the town's leadership was an early champion of renewable energy. According to Town Manager Thomas Lynch, "Reducing our greenhouse gas emissions through energy efficiency and renewable energy is central to the town's management and growth strategy. Being a coastal community, we are on the front lines of sea-level rise, major storms, and other effects of climate change. Our government leaders and residents understand the challenges we face and take responsibility for doing our part."¹⁸

In July 2010, the Barnstable town council amended the town zoning code by creating a ground-mounted solar photovoltaic (PV) overlay district to facilitate the development of ground-mounted solar PV systems.¹⁹ Nearly all of the solar PV projects in Barnstable and surrounding towns are implemented by CVEC. As the regional entity responsible for procuring and facilitating the development of renewable energy projects for its member towns, CVEC has helped Barnstable achieve the most total solar energy capacity and the third-highest solar energy installations of any municipality in the state, according to a 2012 report by the Environment Massachusetts Research and Policy Center.²⁰

Barnstable boasts many completed and proposed solar generation projects, which are highlighted in Table 1. According to Barnstable energy coordinator and former three-term town council member Richard Elrick, "Town leaders are committed to renewable energy and solar in particular. The town of Barnstable has been one of the leaders in our region in adopting solar energy as a stable, reliable, and clean energy source."²¹ Citizens echo Elrick in their commitment to renewable energy. In a 2009 citizen survey, almost 85 of respondents indicated that the town should pursue a policy to harness renewable energy resources.²²

Barnstable is also known as a progressive community, which has enabled city leaders to be proactive in their sustainability efforts.

Elrick explained that towns designate sites on which to locate solar projects. CVEC and the local utility, NSTAR Electric and Gas, then evaluate the feasibility of the site and identify any improvements needed to connect renewable energy to the utility grid. Once a site is approved, CVEC releases a request for proposals, which calls for the town to lease the property to the developer. The developer builds and owns the array and sells the electricity back to the municipality through a PPA.

In CVEC's Solar PV Initiative Round 1, CVEC entered into an agreement with American Capital Energy to develop ground-mounted PV projects at eight sites in seven municipalities, including a 4.2 MW project on seventeen acres of a capped landfill in Barnstable, for a total of 16 MW of electricity. The groundbreaking for the eight sites took place in November 2013, and these projects are expected to provide 26 percent of the municipal energy demand and 1.1 percent of the total energy load for all customers on Cape Cod and Martha's Vineyard.²³

In CVEC's Solar PV Initiative Round 2, CVEC entered

Solar Renewable Energy Certificates

As renewable generators produce electricity, they create one solar renewable energy certificate (SREC) for every 1000 kilowatt-hours of electricity placed on the grid. The SREC product is what conveys the attributes and benefits of the renewable electricity. SRECs serve the role of laying claim to and accounting for the associated attributes of renewable-based generation. SRECs embody positive environmental impacts of renewable energy and convey these benefits to the REC owner.

into an agreement with Broadway Electrical to develop 20 MW of solar PV, which entailed both roof- and ground-mounted systems in ten towns and districts, including several sites in Barnstable.²⁴ On January 17, 2014, Broadway Electrical, which had been in business for seventy-seven years, announced that it was going out of business. CVEC leaders were uncertain whether the Round 2 projects would come to fruition. Fortunately, according to the contract between CVEC and Broadway

Table 1: Completed and Proposed Solar Projects in Barnstable

HOST	TYPE	SIZE IN KILOWATTS (kW)	EXPECTED/ACTUAL COST SAVINGS (\$)	20-YEAR SAVINGS TOTAL (\$)
INSTALLED SOLAR PROJECTS				
Water pollution control (WPC) facility	Solar - Roof	819	WPC wind/solar cost savings since 6/1/11: \$299,542	
Hyannis Youth and Community Center	Solar - Roof	13		
Solid Waste Building	Solar - Roof	3		
Barnstable High School	Solar - Roof	2		
Barnstable High School	Solar - Roof	131		
TOTAL INSTALLED		968		
PROPOSED SOLAR PROJECTS				
Barnstable High School	Solar - Roof	463	23,217	23,217
West Villages School	Solar - Roof	61	3,235	101,996
Senior Center	Solar - Ground	140	11,310	316,101
Solid-waste landfill cap	Solar - Ground	4,044	273,274	7,980,219
Airport	Solar - Ground	5,997	276,502	7,788,927
Airport revenue to general fund	Solar - Ground		276,502	5,414,912
Independence Park	Solar - Ground	1,378	111,021	3,102,723
TOTAL PROPOSED		12,083	TOTAL 894,516	25,436,747

Electrical, G&S Solar Installers, one of Broadway Electrical's financiers, was authorized to take over the project, and DOER granted permission to extend the project deadline. Therefore, many of these CVEC projects, including three in Barnstable, remain eligible to receive solar renewable energy certificates (SRECs) (see text box).²⁵

With no funding provided by CVEC, project developers earn money from federal and state tax credits, selling the SRECs and claiming depreciation on the arrays. According to CVEC president John Checklick in an interview, "Allowing companies to compete for and subsequently develop large portfolios of projects, as opposed to individual projects, allows developers to take advantage of economies of scale in terms of equipment purchases, labor, and financing."²⁶ Developers then pass along the benefits to CVEC's member towns. In addition to the financial benefits of long-term PPAs with project developers, CVEC and its members earn money by offsetting electricity use via net metering. Under state law, a municipality can earn net metering credits on up to 10 MW of solar energy. As illustrated in Table 1 above, Barnstable is expected to exceed that limit.

Solar Projects on Barnstable Local Government Facilities

The projects highlighted below exemplify the types of projects facilitated by the town of Barnstable on public properties.

Barnstable High School

Cape Light Compact's initiative installed PV panels on schools in each of the twenty-one towns in its service area, including Barnstable High School. Since its installation in 2006, the 133 kW rooftop solar array at Barnstable High School has generated over 15,388 kWh of power and avoided over 26,560 pounds of carbon dioxide emissions. The system is monitored, and its energy production is tracked as part of an educational tool. As part of its Solar PV Initiative Round 2, CVEC is in the process of adding an additional 463 kW to the high school's solar PV system.

Hyannis Youth and Community Center

The Hyannis Youth and Community Center is a 105,000-square-foot full-service recreation facility serving the town of Barnstable. It was opened in 2009 and contains PV solar panels on a south-facing roof. The site is also permitted for a future wind turbine, and a 65 kW cogeneration system is in the conceptual design



133 kW solar array at Barnstable High School.



819 KW solar array at Water Pollution Control Facility.

stage awaiting funding.

Barnstable Water Pollution Control Facility

With funding from the American Reinvestment and Recovery Act (ARRA) in 2011, the town installed combined wind and solar systems at its water pollution control facility. The 819 kW solar array and the two 100 kW wind turbines provide more than half of the plant's energy needs.

Barnstable Landfill

Under the CVEC Solar Initiative Round 1, a 4.2 MW ground-mounted PV array was installed at the Barnstable landfill located in Marstons Mills. This large-scale installation contains 14,275 solar panels on seventeen acres and is expected to generate nearly 20 million kWh in its first year of operation, enough to power nearly

3,000 homes.²⁷ In addition, the project is expected to save the town \$275,000 each year.²⁸

Current and Future Challenges

While the town of Barnstable has had tremendous success in achieving its goals for solar energy generation, it has also faced its share of challenges. The examples below describe some of those challenges and how they are being addressed by either the town or state leaders.

Residential Solar

In both 2012 and 2013, the town applied to the Solarize Mass program, which promotes and facilitates the installation of rooftop solar PV for residents. However, as mentioned previously, its applications were rejected, so it is looking to create its own incentives and opportunities for homeowners. As of March 2014, members of the Barnstable Renewable Energy Commission continued to express interest in establishing such a program and were discussing how to proceed in terms of marketing rooftop solar to residents.²⁹

Resistance from Utilities

Because utilities' business models depend upon selling as much electricity as possible to as many customers as possible, net metering effectively poses a threat to their traditional way of operating.³⁰ Therefore, solar projects throughout the country have been facing mounting resistance from utilities.³¹

In Massachusetts, the law places responsibilities on project developers for ensuring that projects can be safely connected to the electricity grid and on utilities for analyzing necessary upgrades in a timely manner. However, the analyses and resulting negotiations between project developers and the utilities can be lengthy and contentious and can scuttle even the most well-planned projects.

In January 2010, Massachusetts DOER launched the [Solar Carve-Out Program](#) to support the requirements of the 2008 Green Communities Act. This program provides price supports for SRECs and financial incentives for commercial, residential, public, and nonprofit entities to develop projects of 6 MW or smaller. The program closed on December 31, 2013, and three days later DOER began the rulemaking for a revised Solar Carve-Out Program II which was enacted by the state legislature in April 2014. This program, called the [Solar Carve Out II/SREC II](#), calls for supports for Solar PV

projects to be provided until 1,600 MW of PV capacity has been installed statewide. This program is designed to keep a diverse market of PV developers, address the financial barriers that can limit ownership of solar PVs by residential and non-profit customers, and maintain flexibility to respond to changing conditions and limit regulatory complexity.³²

Given the strong success of solar energy generation in Massachusetts, DOER determined that the incentives provided in the Solar Carve-Out II could be less generous while still meeting Governor Patrick's ambitious goals, so the financial incentives were reduced 30 – 50 percent from the first round. The highest incentives remain for small-scale projects, including residential, low income residential and community-based or shared solar projects; the second-highest incentives are for ground- and building-mounted solar projects above 25 kW, in which more than 67 percent of the energy generated is used on-site. DOER also provides incentives for installations brownfields and landfills.³³

Lessons Learned from Barnstable

The track record of innovation and accomplishment in Barnstable is no accident. Several of the factors that have contributed to the Town's solar energy success are discussed below.

- **Leadership from the top.** There is no disputing the fact that both state leadership and regional entities—Cape Light Compact and CVEC—have been integral to the town's solar energy successes. However, the history of Barnstable's solar energy commitment dates back to Town Manager John Klimm, who served from 1999 to 2011. An early advocate for renewable energy, Klimm made a point to institutionalize renewable energy programs through the creation of the Renewable Energy Commission, advocating for ordinances such as the ground-mounted solar PV overlay district, applying for ARRA funding to support the installation of solar and wind energy on the water pollution control facility, and many other initiatives. Since taking office, Tom Lynch, Barnstable's current town manager, has continued to push the town's renewable energy efforts through the siting of solar projects on town facilities through the CVEC as well as other initiatives.
- **Coordination between stakeholders.** The wide-ranging solar energy initiatives in Barnstable and throughout Cape Cod are, in part, the result of

cooperation among local stakeholders. The Cape Light Compact charter requires that all member municipalities have a representative on its board of directors. In addition, the leadership of the CVEC comprises representatives of member jurisdictions, and the Renewable Energy Commission comprises local residents appointed by the town council. The community and municipal leadership of these entities have to communicate, engage, and coordinate among a range of stakeholders. This has helped to ensure that goals are aligned among neighboring jurisdictions, thereby limiting competition for limited resources. In addition, this coordination and cooperation has helped communities realize economies of scale in terms of contracting, thereby saving taxpayers money and dedicating greater funding for renewable energy investments.

- **Community support.** Residents of Cape Cod are known for their environmental ethos. As a seaside community, Barnstable residents are keenly aware of the impacts of sea-level rise and other symptoms of climate change. Energy education efforts by Cape Light Compact have helped residents understand the importance of renewable energy and have encouraged and facilitated energy efficiency measures by homeowners and business owners.

Contacts

Richard Elrick, Energy Coordinator, richard.elrick@town.barnstable.ma.us, 508.790-6400

Endnotes

1. Sarah Colvin Nelson, ed., *2013 Annual Report: A Year of Accomplishment*, <http://www.townofbarnstable.us/AnnualReports/AR2014forweb.pdf>
2. <http://quickfacts.census.gov/qfd/states/25/2503690.html>
3. Colvin Nelson., 141; see also Town of Barnstable, Renewable Energy Commission, at <http://www.town.barnstable.ma.us/energycommission/>.
4. Town of Barnstable, Massachusetts, Operating Budget: Fiscal Year 2015, 3, <http://www.townofbarnstable.us/Finance/15Budget/FY15%20BUDGET%20HANDOUT.pdf>.
5. Nelson, ed., *2013 Annual Report: A Year of Accomplishment*.
6. Solar Energy Industries Association, “Massachusetts Solar,” <http://www.seia.org/state-solar-policy/massachusetts>; Mark Sylvia, “Massachusetts Solar Market, RPS Solar Carve-Out II, Final Policy Design” (Massachusetts Department of Energy Resources [DOER], December 13, 2013), <http://www.mass.gov/eea/docs/doer/rps-aps/doer-srec-ii-final-design-restructuring-roundtable-syl->

- [via-121313.pdf](http://www.mass.gov/eea/docs/doer/rps-aps/doer-srec-ii-final-design-stakeholder-review-mtg-081213.pdf).
7. Patrick, “Guest View; “Massachusetts Solar Market RPS Solar Carve-Out II Updated Proposed Design Stakeholder Meeting August 12, 2013” (DOER), <http://www.mass.gov/eea/docs/doer/renewables/solar/srec-ii-final-proposed-design-stakeholder-review-mtg-081213.pdf>.
 8. Massachusetts System of Assurance of Net Metering Eligibility, “Provisional Application Activity and Remaining Capacity,” <https://app.massaca.org/allocationreport/report.aspx>.
 9. An Act Relative to Net Metering, House No. 3901, 188 General Court of the Commonwealth of Massachusetts, January 17, 2014, <https://malegislature.gov/Bills/188/House/H3901>.
 10. Ibid.
 11. Interview with Edward Woll Jr., Sierra Club Massachusetts chapter vice chair and chapter energy chair, April 23, 2014; interview with Rob Sargent, energy program director, Environment America, April 28, 2014; Jon Chesto, “Debate over the Future of Solar Energy in Massachusetts Heats Up at the State House,” *Boston Business Journal*, March 2, 2014, http://www.bizjournals.com/boston/blog/mass_roundup/2014/03/solar-show-down-on-beacon-hill.html?page=all (accessed October 26, 2014); and Clean Technica, “Solar Net Metering Survival & Progress In Massachusetts, Washington, Vermont, & Utah,” <http://cleantechnica.com/2014/03/22/look-solar-progress-massachusetts-states/#M1WYICUIf1qsJZDo.99>.
 12. Roselund, “Redesign of Massachusetts’ incentive system dies in legislature, net metering caps raised slightly,” http://www.pv-magazine.com/news/details/beitrag/redesign-of-massachusetts-incentive-system-dies-in-legislature-net-metering-caps-raised-slightly_100015943/#ixzz3LJV3MBHJ
 13. As defined by the U.S. Department of Energy’s Database of State Incentives for Renewables and Efficiency, “as-of-right siting” is “development may proceed without the need for a special permit, variance, amendment, waiver, or other discretionary approval. As-of-right development may be subject to non-discretionary site plan review to determine conformance with local zoning bylaws as well as state and federal law. As-of-right development projects that are consistent with zoning bylaws and with state and federal law cannot be prohibited” (see http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MA14R).
 14. DOER, “Green Communities Designation and Grant Program” (2014), <http://www.mass.gov/eea/energy-utilities-clean-tech/green-communities/gc-grant-program/>.
 15. Sylvia, “Massachusetts Solar Market.”
 16. Nelson, ed., *2013 Annual Report: A Year of Accomplishment*, 142.
 17. Cape Light Compact, *Annual Report on Energy Efficiency Activities in 2012*, (August 31, 2012), 1 – 4, <http://www.capelightcompact.org/library/2010/08/Cape-Light-Compact-2012-Annual-Report-201307311.pdf>.
 18. Quote provided by Richard Elrick, Energy Coordinator, on behalf of Town Manager Thomas Lynch, January 24, 2014.
 19. Town of Barnstable, Code § 240-44.2, “Ground-Mounted

- Solar Photovoltaic Overlay District,” <http://ecode360.com/15221306>; DOER, “Model As-of-Right Zoning Bylaw: Allowing Use of Large-Scale Ground-Mounted Solar Photovoltaic Installations,” <http://www.mass.gov/eea/docs/doer/green-communities/grant-program/solar-model-bylaw-mar-2012.pdf>.
20. Environment America, “Falmouth, Cape Cod, Leading Massachusetts in Solar Development,” news release, July 17, 2012, <http://www.environmentamerica.org/news/mae/falmouth-cape-cod-leading-massachusetts-solar-development>.
 21. Interview with Richard Elrick, energy manager, August 8, 2013.
 22. University of Massachusetts Dartmouth, Center for Policy Analysis, *Town of Barnstable Citizen Survey 2009*, 16, <http://www.town.barnstable.ma.us/TownManager/BarnstableCitizensSurvey1216091.pdf>.
 23. “Cape & Vineyard Electric Cooperative Announces Ground Breaking Ceremonies for Three of Eight Solar Projects,” news release, November 12, 2013, <http://www.cvecinc.org/resources-media/news/>.
 24. Cape & Vineyard Electric Cooperative, Inc., *Annual Report for Fiscal Year 2013*, July 1, 2012 – June 30, 2013, <http://www.cvecinc.org/library/2013/09/CVEC-FY13-Annual-Report-9.26.13.pdf>.
 25. Rich Eldred, “Sun Shines Again on Cape Cod Solar Projects,” *Wicked Local Orleans*, March 21, 2014, <http://orleans.wickedlocal.com/article/20140321/News/140328817> (accessed October 28, 2014).
 26. Interview with John Checklick, DATE.
 27. Edward F. Maroney, “Here Comes the Sun,” *Barnstable Patriot*, November 8, 2013, http://www.barnstablepatriot.com/home2/index.php?option=com_content&task=view&id=34611; Laura M. Reckford, “Council Approves Large Solar Array for Landfill,” *Enterprise Capenews.net*, July 22, 2011, http://www.capenews.net/archives/council-approves-large-solar-array-for-landfill/article_fa3049af-8139-5dd7-8a8d-b56d93c74192.html (both accessed October 28, 2014).
 28. Susan Vaughn, “Solar Project Gets Warm Reception,” *Wicked Local.com*, June 23, 2011, <http://www.wickedlocal.com/x539090810/Solar-project-gets-warm-reception> (accessed October 28, 2014).
 29. Town of Barnstable, Renewable Energy Commission, Approved Minutes, March 17, 2014, http://www.town.barnstable.ma.us/BoardsCommittees/RenewableEnergy-Commissionmeetings/Minutes/2014/REC-approvd-March17_2014_minutes.pdf.
 30. Peter Kind, *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business* (Washington, D.C.: Edison Electric Institute, January 2013).
 31. Matt Twomey, “The Dirtiest Battle in Clean Energy Heats Up,” *CNBC.com*, November 15, 2013, <http://www.cnbc.com/id/101198537> (accessed October 28, 2014).
 32. Sylvia, “Massachusetts Solar Market.”
 33. <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/solar/rps-solar-carve-out-2/about-solar-carve-out-ii.html>

Author

Danielle Miller Wagner

SunShot Solar Outreach Partnership Case Studies are based upon work supported by the U.S. Department of Energy under Award Number DE-EE0003526. The U.S. Department of Energy (DOE) SunShot Initiative is a collaborative national effort to dramatically reduce the cost of solar energy before the end of the decade. The SunShot Solar Outreach Partnership (SolarOPs) is a U.S. DOE program providing outreach, training, and technical assistance to local governments to help them address key barriers to installing solar energy systems in their communities. The International City/County Management Association (ICMA), American Planning Association (APA), and National Association of Regional Councils (NARC), along with ICLEI-Local Governments for Sustainability and its partners, were competitively selected by the U.S. DOE to conduct outreach to local governments across the United States, enabling them to replicate successful solar practices and quickly expand local adoption of solar energy. For more information visit the SolarOPs website (solaroutreach.org).

Disclaimer: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.



**SOLAR
OUTREACH**



ICMA

Leaders at the Core of Better Communities