Opening C&I Solar Markets with C-PACE

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Current C&I Market Challenges

1. Coastal Focus

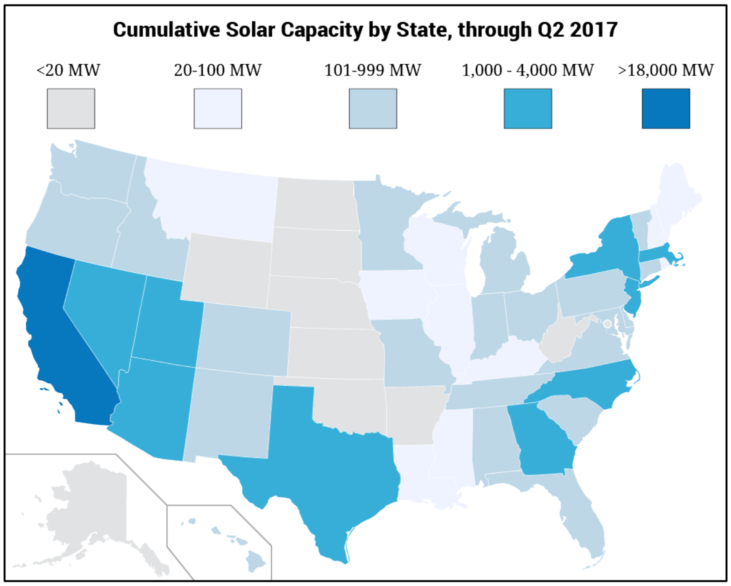


Figure 1

The US solar industry is largely concentrated on the East and West Coasts (Fig. 1), and with good reason: coastal markets have high energy prices, attractive incentives, and diverse ownership models that allow commercial property owners to decide their appetite for investment. However, the majority of US states see lackluster commercial solar development for two key reasons:

De Jure (of legal):
Power Purchase Agreements (PPAs) are constrained in 24 states, either due to direct prohibitions or regulatory overhead on third party ownership (9 states), or the law is too ambiguous to facilitate financing (15 states) (Fig. 2).

De Facto (matter of fact):
As of June 2017, 22 states have blended commercial energy rates below $0.10/kWh[i] (the avoided cost via solar is likely even lower) making the economics of a solar project difficult though still possible (Fig. 3).

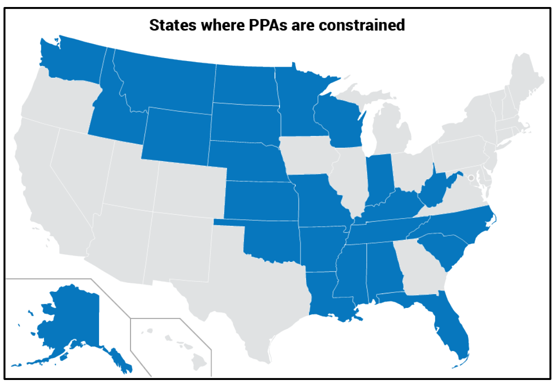


Figure 2

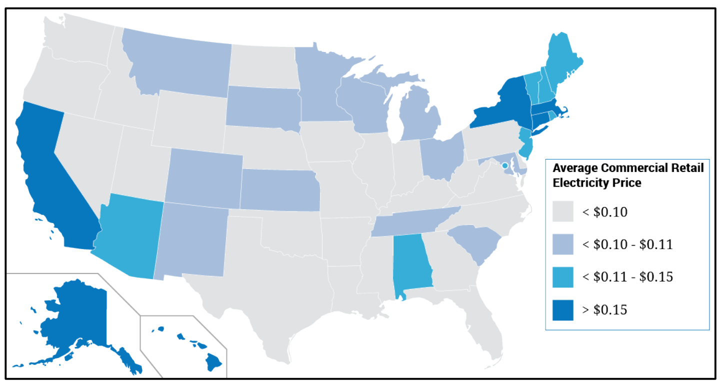


Figure 3

2. C&I Project-Level Blind Spots

Policy and economic forces can impact market development on a macro level, but on a project-by-project basis even the most mature solar markets cannot fully meet the requirements of C&I customers. Traditional financing models exclude millions of facilities where credit, transferability, and split incentive issues arise.

C-PACE: A Long-Term Financing Product

Commercial Property Assessed Clean Energy (C-PACE) is a financing tool that allows a property owner to finance 100% of the cost of solar and/or energy efficiency upgrades as a voluntary property tax assessment on a commercial building for to 10-30 years. The assessment is tied to the building, not the tenant, and can be passed from owner to owner via property sale. It is considered financed ownership, not third-party owned solar.

The longevity that C-PACE offers is key. Power purchase agreements thrived because the cost of the solar power system was financed over 20 years, unlike traditional financing structures that only allow capital or operating leases, typically running 7-10 years. In low cost energy markets, solar may not provide a positive return until year 13-15. But with C-PACE, allowing the loan to amortize over a longer period means markets with low energy prices can still have "cash flow positive" solar projects.

Expanding Geographic Reach: C-PACE Can Open PPA-Prohibited Solar Markets

In certain areas of the country, C-PACE has the unique ability to unlock markets by being the sole financing mechanism that allows amortization over a longer period than a 7 to 10-year traditional lease structure. In states where PPAs are prohibited, C-PACE is especially valuable.

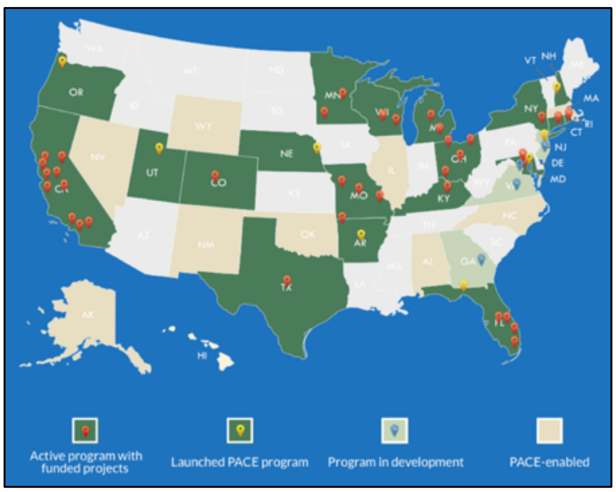


Figure 4 | Source: PACENation

Mapping the Opportunity

In order for C-PACE financing to exist, two things must happen:

- The state must pass enabling legislation to allow jurisdictions to add assessments onto properties; and

- A district must be created to administer the C-PACE loan.

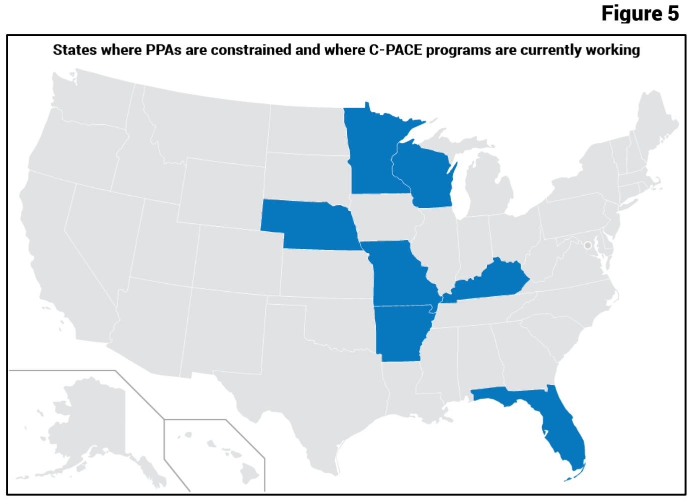
So far, 34 states have C-PACE-enabling legislation, and of those, 21 have working districts where projects are being financed (Fig. 4). States with C-PACE include both traditionally great solar markets (California and Connecticut) and states where solar development is lacking.[ii]

There are 7 states where PPAs are constrained (i.e., prohibited or too ambiguous to finance) ***and*** currently have working C-PACE programs. These states, which represent valuable growth opportunities for solar deployment, include :

Arkansas, Florida, Kentucky, Minnesota, Missouri Nebraska and Wisconsin (Fig. 5).

In these PPA-prohibited states, C-PACE may be the only option for long-term solar financing. See SEIA's recent analysis of C-PACE, and a list of all C-PACE programs in the U.S., here.

Figure 5



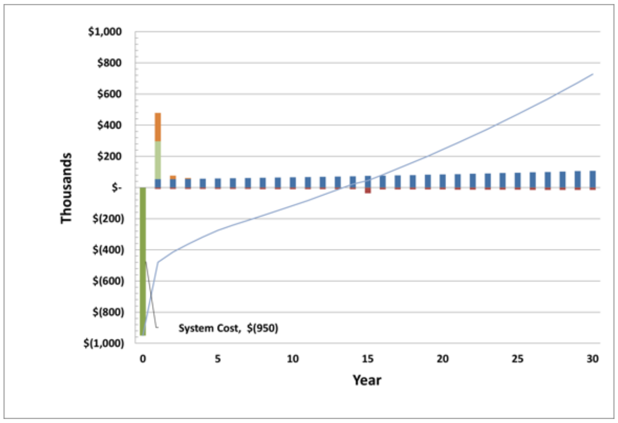
C-PACE Can Open Low-Cost Energy States

The following charts represent project economic analyses of a 500 kW example solar project financed as a cash purchase, under a traditional 10-year capital lease, and through a 30-year PACE loan. Details of the project include:

Size: 500kW	**First Year Output: 665,000 kWh**
Cost: $950,000	**Avoided Cost of Solar Yr. 1: $0.08/kWh**
	Energy Price Escalator: 3% per year

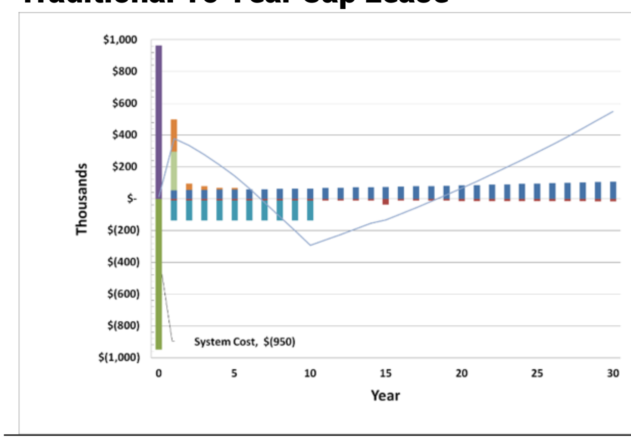
- Total Value of Depr
- System Cost
- ITC
- Electricity Savings
- Lease / PACE Payment
- Lease / PACE Proceeds
- Total Solar Ops Expenses
- Cumulative

Cash Purchase



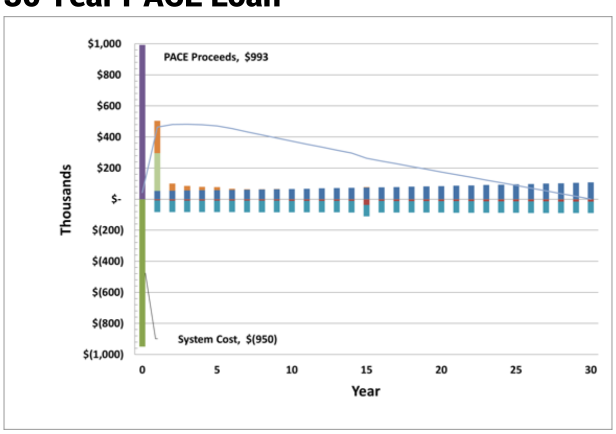
A cash purchase leaves the building owner in the red until year 13. This 6.5% return has been unattractive for much of the market.

Traditional 10 Year Cap Lease



In markets where PPAs are prohibited, capital leases are a common method for financing facility improvements. While the building owner is cash-flow positive thanks to tax credits in the early years, the payments outweigh savings for 13 years in this scenario.

30 Year PACE Loan



A 30-year PACE loan allows the building owner to take advantage of lucrative tax incentives immediately, and the long term of the loan allows the project to be cumulatively cash-flow positive throughout the system life. The owner may buy out the loan early if cheaper capital becomes available.

Bundling Measures to Improve Project Economics

Efficiency with Solar to Improve Returns

For most C&I customers, decisions about facilities upgrades are based on payback, IRR, and NPV. In low-cost energy states, these metrics can look unattractive for solar. Rather than comprehensive energy efficiency upgrades and onsite renewables, facilities managers have focused on “low hanging fruit” like lighting with returns of 18% or more, especially if a local utility has an incentive program. C-PACE allows property owners to combine efficiency measures, building upgrades, storage, and renewables into one loan. This “bundling” means that easy efficiency measures like lighting can offset the longer returns of solar and make a project more attractive:

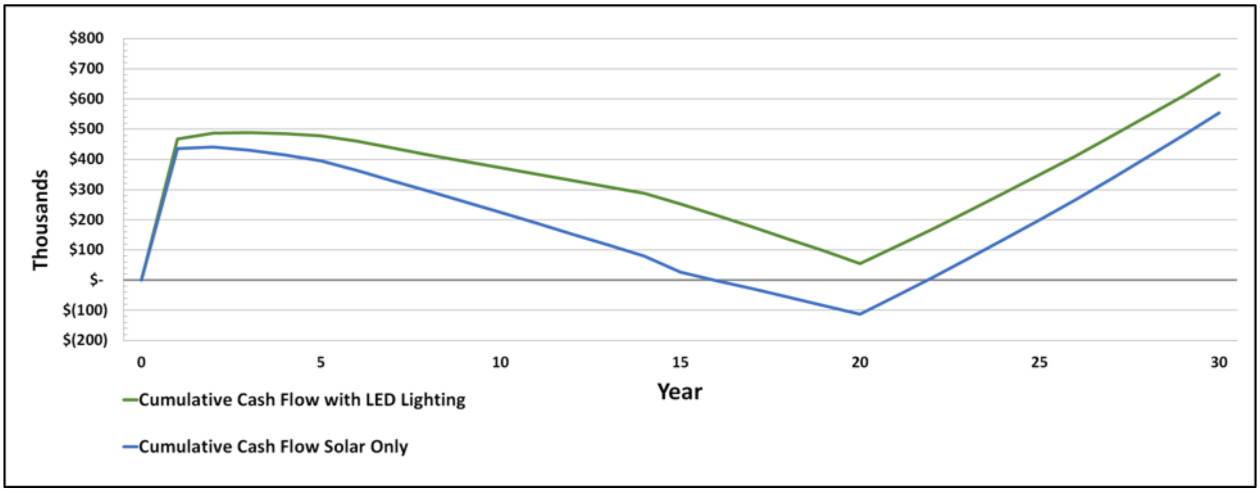


Figure 6

In Fig. 6 above, a 500kW solar array offsetting $0.10/kWh energy charges financed over a 20-year C-PACE term is not cumulatively cash flow positive through the term of the loan. However, once a $100,000 lighting retrofit project is added to the financing package, the project is cumulatively positive throughout the system life, and the total project savings increases by $150,000.

Storage + Solar to Address Demand Charges

On its own, distributed solar can only offset energy usage charges for a commercial client, while a reduction in demand charges cannot be accurately predicted. In many areas of the country, demand charges can account for 20 cents or more per kWh[iv], or 30-70% of the total electric bill (Fig. 7). On-site storage combined with solar has the potential to address both demand and energy charges. As the price of storage comes down, C-PACE makes it possible to bundle the financing of solar and storage under one assessment and significantly increase the economic impact of rooftop solar. As the price of storage comes down, this impact will reach more and more commercial clients.

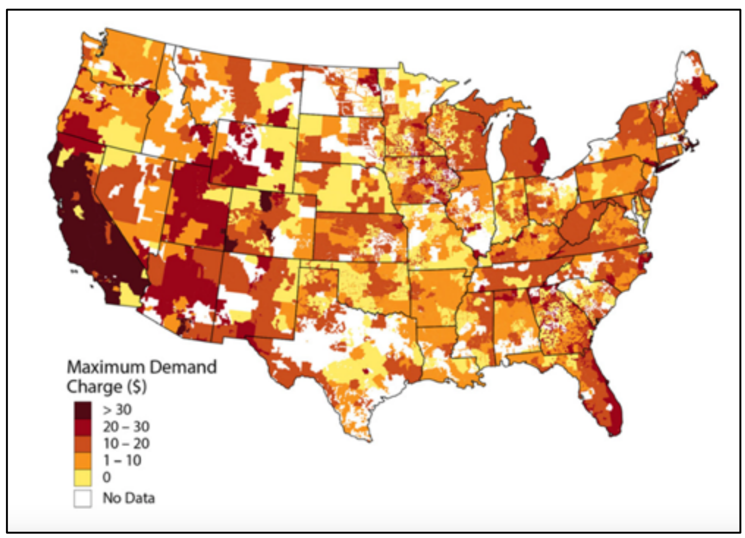


Figure 7

Project-Level Solar Development Issues Solved Via C-PACE

The benefits of C-PACE are not relegated to low-cost energy markets or geographies where PPAs are prohibited. Even the most mature and thriving solar markets have areas that traditional solar development techniques cannot address. C-PACE is a tool than can continue to encourage solar market growth by addressing the following common C&I market challenges:

- **Split Incentive:** Traditional solar investment metrics rely on energy savings – every kWh saved puts an owner closer to payback and earnings. In buildings where the owner does not pay energy bills, there has been no incentive for them to invest in onsite solar. However, because C-PACE is tied to the property taxes, owners can pass the cost of the array onto the energy-consuming tenant. This works especially well in triple net lease structures: the tenant now pays the assessment fees and receives the benefits of energy savings.

- **Credit:** Power Purchase Agreements require audited financial statements and can typically only service investment-grade credit. Most businesses are not formally rated by a rating agency, and of those that are, most are not considered investment grade. For example, as of late 2016, 55% of US businesses rated by S&P did not meet the investment-grade credit requirement. Similarly, lease structures tie rates and terms to the creditworthiness of the owner.

  C-PACE, on the other hand, is secured via a first lien on the property and acts as direct collateral for investors. Rather than analyzing the credit of the commercial or non-profit owner, C-PACE financiers look to factors including building value, loan-to-value, and the ability for the property to be repurposed by future owners when determining whether or not to provide capital. While C-PACE may not be appropriate for companies with bankruptcy records, it can be more forgiving than traditional financing and could potentially double the market for long-term solar financing.

- **Transferability:** If an offtaker were to vacate a property under a PPA, the system would need to be transferred to another credit-worthy business. Otherwise, the offtaker would need to “buy out” the system or face other penalties, depending on the contract. As properties change hands, this can be a tricky issue for developers and companies looking to host a solar project. Recently, more corporate offtakers have been requesting 10-year contracts as a way of getting ahead of vacancy issues, pushing the price of a PPA up even further. Since C-PACE is tied to the building, not the tenant, it avoids this transfer complication. Once a new owner takes control of a property, they can continue paying the assessment as part of the property taxes, or the system can be paid off prior to sale.

Conclusion: C-PACE Can Open Markets and Projects Previously Closed to Development

The current state of the C&I solar market is limited in scope due to the limitations of traditional methods of financing solar energy projects. C-PACE has the potential to expand solar opportunities and open markets in three ways:

- Provides a long-term financing solution that can be utilized in markets where third party ownership (e.g. PPAs) is prohibited. C-PACE may help to open over 4.5 million companies with properties in PPA-prohibited states to solar development.[vi]
- Allows markets with low electricity rates to be opened to development by providing longer-term financing and the ability to bundle solar with energy efficiency upgrades.
- Addresses project-specific issues that have hindered solar development in mature markets, like transferability and credit hurdles. According to Moody's, in California alone, nearly two-thirds of rated businesses hold non-investment-grade credit.[vii] C-PACE could continue to open this already strong market with a long-term financing option.

C-PACE is a critical tool in opening tomorrow's solar markets, and strengthening those in existence today. It should be taken seriously by the thousands of C&I developers operating across the country.

About SEIA

Celebrating its 43rd anniversary in 2017, the Solar Energy Industries Association® is the national trade association of the U.S. solar energy industry, which now employs more than 260,000 Americans. Through advocacy and education, SEIA® is building a strong solar industry to power America. SEIA works with its 1,000 member companies to build jobs and diversity, champion the use of cost-competitive solar in America, remove market barriers and educate the public on the benefits of solar energy. Visit SEIA online at www.seia.org.

About Alta Energy

Alta Energy provides comprehensive analytics, strategic advice and procurement services for companies looking to become more sustainable and profitable through the use of renewable energy. Alta Energy partners with its customers to deliver holistic solutions that are both technology and service neutral, representing their customers' best interests and enabling them to achieve the environmental and economic benefits of renewable energy.

About SEIA's C&I Working Group

SEIA's C&I Working Group is designed to expand opportunities for solar deployment in the commercial, industrial and non-profit sectors, lower transaction costs, and expand opportunities for comprehension of financial innovations such as PACE. See https://www.seia.org/initiatives/finance-programs

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i. DSIREusa April 2017
ii. EIA Data: https://www.eia.gov/electricity/data/browser/#/topic/7?agg=0,1&geo=vvvvvvvvvvvvo&endsec=k&linechart=~&freq=M&start=200101&end=201706&ctype=linechart&ltype=pin&rtype=s&pin=&rse=0&maptype=0
iii. PACENation: http://pacenation.us/pace-programs/
iv. NREL
v. Financial Times. *US corporate bonds: The weight of debt*. (December 4, 2016). Retrieved September 07, 2017, from https://www.ft.com/content/41213b02-b87e-11e6-ba85-95d1533d9a62
vi. Dun & Bradstreet. *Company Search*. Retrieved September 9, 2017 from D&B Hoovers database.
vii. Moody's Investors Service. *Issuer Ratings, California*. Retrieved September 9, 2017 from Moody's database.