

Deciding on a Financing Approach and Beginning PV Procurement

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PV Project Implementation Process



Learning Objectives

- Be able to decide whether direct ownership, third-party ownership, or an energy performance contract is the best option for your city or county
- Understand next steps in the PV procurement process, depending on which method you select

PV Finance and Procurement

Direct Ownership

Power Purchase Agreement (PPA)

Energy Savings Performance Contract (ESPC)

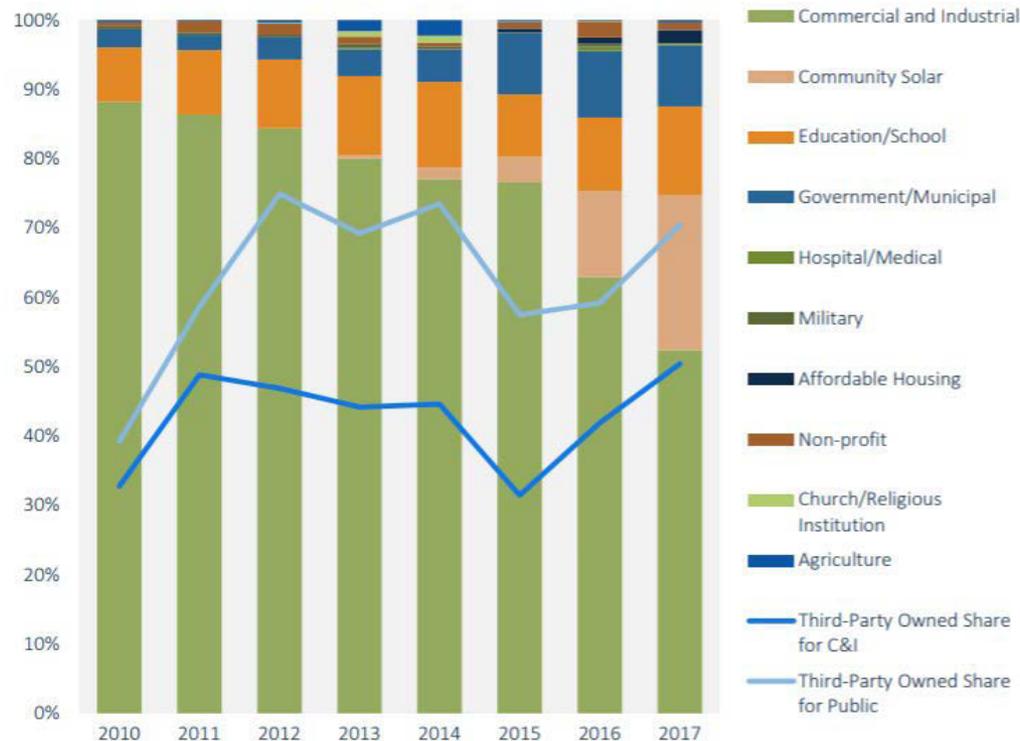
Other Options

Procurement Lessons

Resources

How do Local Governments Finance PV?

Non-Residential Installations by Customer Type



Source: GTM Research

- GTM research shows that about 70% of the *public sector* solar used third-party ownership model in 2017.
- Public sector entities, who are tax-exempt, rely on third-party ownership to capture the investment tax credit (ITC).
- GTM expects a slight decline in third-party owned systems in 2023 when the ITC declines to 10% and tax-exempt customers or customers without sufficient tax appetite turn to direct ownership.

Direct Ownership

Direct Ownership Overview

- Implement a PV project that is government-owned
- Hire engineering, procurement and construction (EPC) contractor to construct project and possibly also a separate O&M contract
- Cities may not have the cash to purchase a system outright. Cities can fund their PV system via internal or external funding sources. For external funding sources, cities must have available borrowing capacity.

Internal Funding Sources	External Funding Sources
<ul style="list-style-type: none">• Revenue generated by tax collection and/or user fees• Other available cash	<ul style="list-style-type: none">• Bonds• Loans

Direct Ownership Example

- The Peralta Community College District, in California, used a general obligation bond (G.O. Bond) for their solar power installation at Laney College.
- Their G.O. Bond monies could be used for capital improvement project, e.g. new construction and renovations.
- Savings from the solar will go back into the general fund, and can support non-capital expenditures.
- 231 kW installed on a baseball field house and parking lot.



Laney College, in California, installed 231 kW of solar

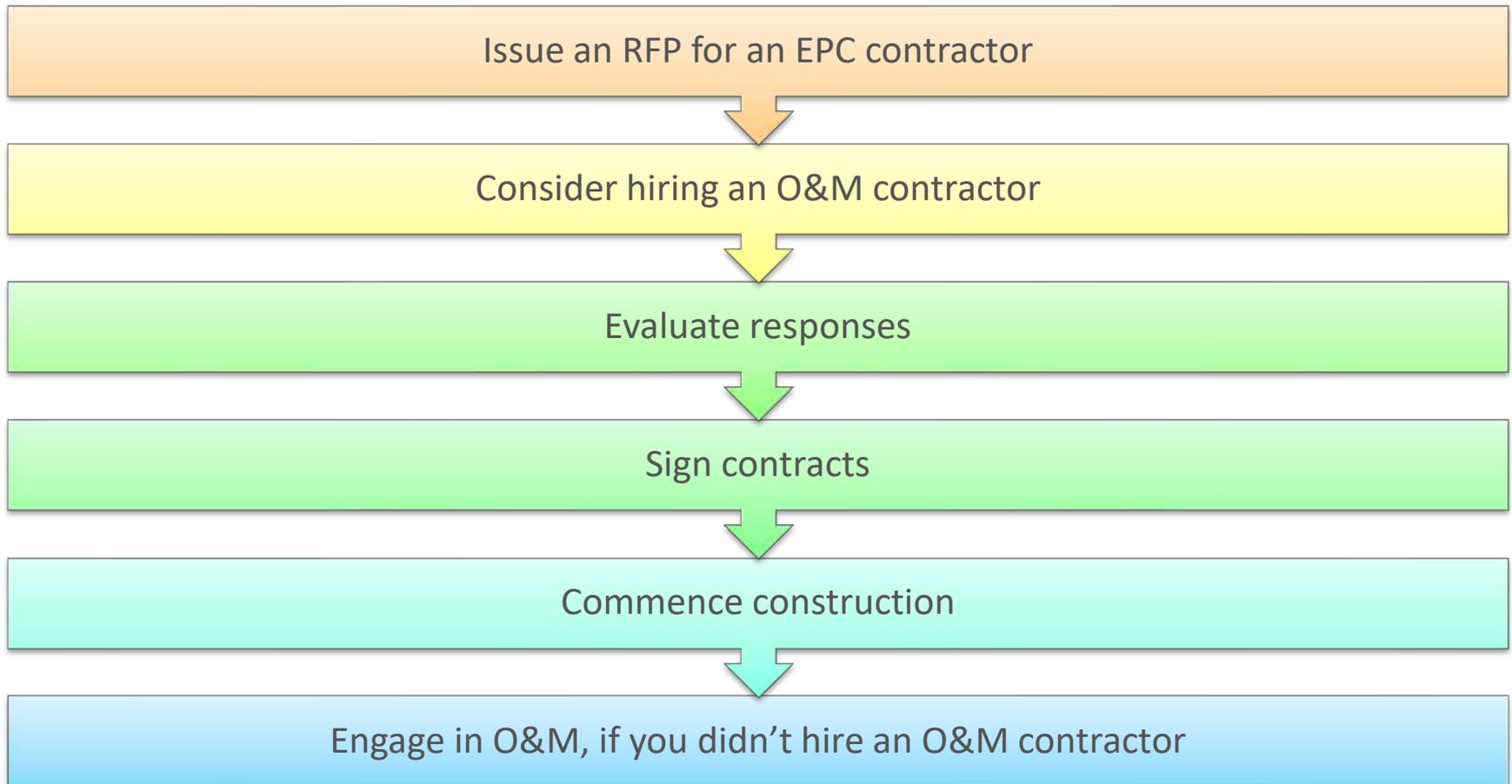
Direct Ownership City Example

- Some cities may choose to own the PV system when grant funds can cover some or most of the purchase.
- Hutchinson, Minnesota received grant funds from their utility, Xcel Energy, that covered $\frac{3}{4}$ of the cost; the city covered the remaining amount.
- The city installed a 400 kW system on a closed landfill.
- The PV system will be directly connected to the city's wastewater treatment plant.



Hutchinson, Minnesota installed 400 kW of solar on a landfill

Direct Ownership Procurement Pathway



Municipal Lease

- Municipal leases are also termed “tax exempt leases” or “tax-exempt lease purchase (TELP)”
- Customer owns the system at the end of the lease term
- Municipal leasing is an alternative to traditional debt financing
- Lower interest rates because the interest is tax-exempt
 - Carefully review an O&M agreement, if you plan to sign one, to ensure that it does not prevent the interest from being tax-exempt
- Faster process than issuing debt
- Typically are not considered debt, for state purposes
- May require minimum system size, comparable to PPA preferred system sizes, generally >500 kW

PPAs

PPA Overview

Third Party Solar Developer

- Purchases, installs, owns, operates & maintains PV project
- Developer can likely take advantage of federal and other tax incentives
- Developer could sell the project's solar renewable energy certificates (SRECs), if they are valuable

City

- Hosts the on-site PV project
- Purchases the energy from the PV project for life of the contract

- Typically the best option for large PV systems (generally >500 kW), as long as there are no legal barriers such as lack of authority
- Long term contract typically required (20 years)

PPA Example

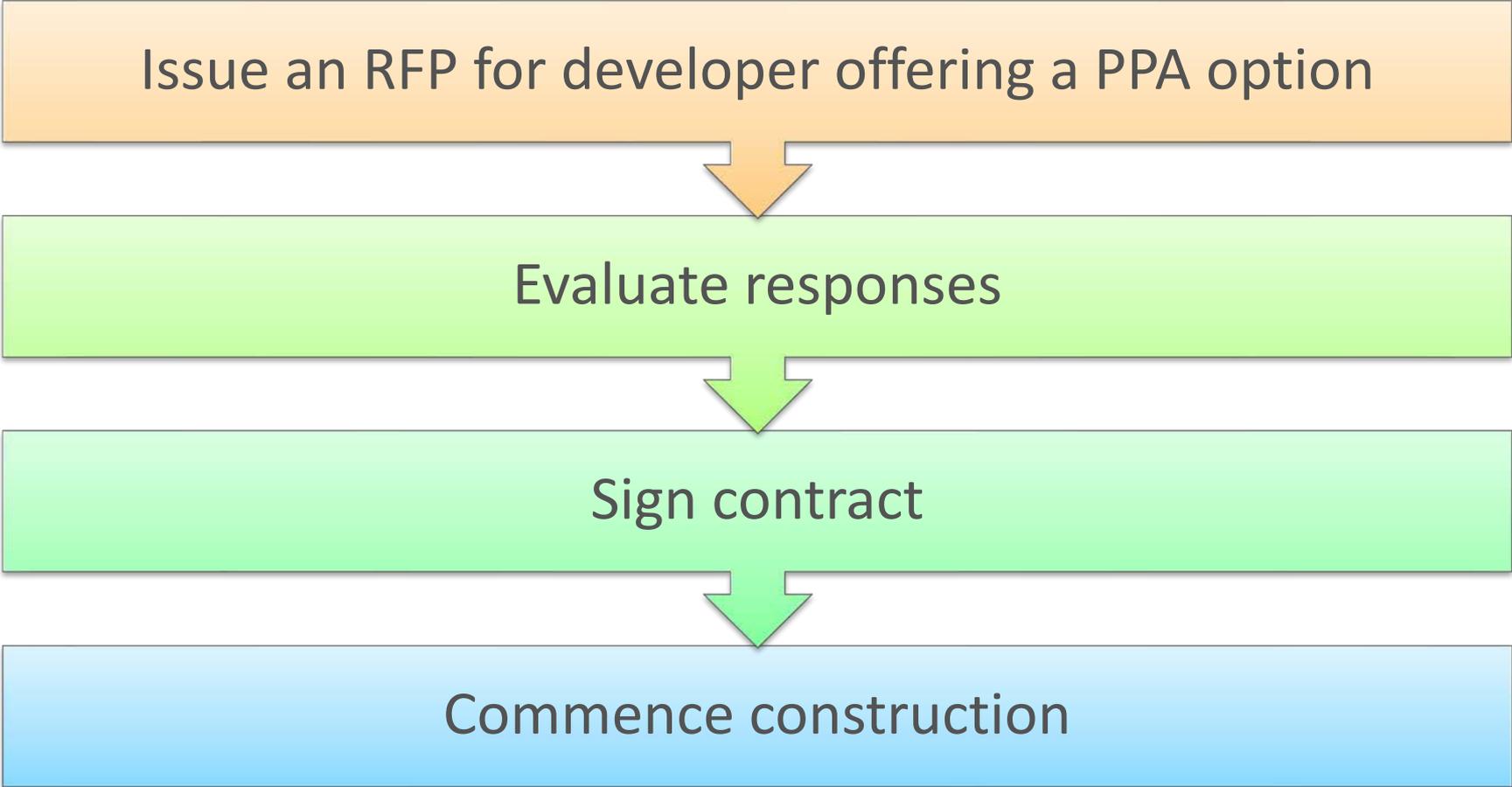
- Washington, D.C.'s Department of General Services (DGS) implemented approximately 11 MW of solar for 40 properties, through a 20-year PPA with WGL Energy.
- The properties include schools, hospitals, recreation centers and the Police Training Academy.
- High SREC prices in the D.C. market make solar PPAs favorable.
- D.C. DGS expects to save \$25 million in electricity costs over the PPA.
- Separate rates for rooftop and carport solar projects.
- Project design and construction, managed by Sol Systems, took approximately 18 months.



Ribbon cutting ceremony for Washington, D.C.'s 11.8 MW of solar

PPA Procurement Pathway

Issue an RFP for developer offering a PPA option



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graph TD; A[Issue an RFP for developer offering a PPA option] --> B[Evaluate responses]; B --> C[Sign contract]; C --> D[Commence construction];
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The diagram illustrates a four-step procurement pathway for a PPA. It begins with an orange box containing the text 'Issue an RFP for developer offering a PPA option'. A downward-pointing orange arrow connects this to a light green box with 'Evaluate responses'. Another downward-pointing light green arrow connects to a medium green box with 'Sign contract'. A final downward-pointing medium green arrow connects to a light blue box with 'Commence construction'.

Evaluate responses

Sign contract

Commence construction

Knowledge Check #1

If your city or county has no or little upfront capital to invest in PV, which financing options should you use?

- Direct Ownership
- Power Purchase Agreement

[Answer: Power Purchase Agreement]

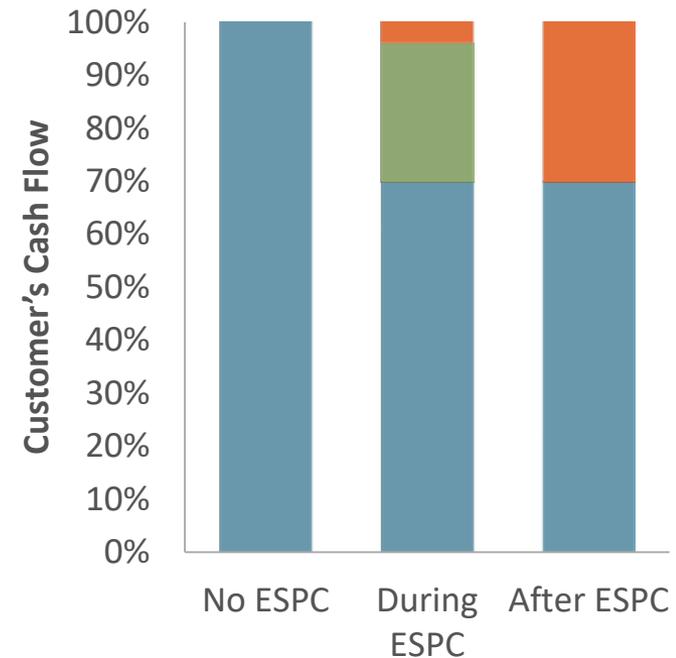
Energy Savings Performance Contract (ESPC)

ESPC Overview

- Also known by other names such as Performance Contracting, Energy Solutions Performance Contracting, energy service company (ESCO) project, etc.
- Public-private partnership with an ESCO to implement energy measures
 - Typically ESCOs implement energy efficiency (EE) and energy management measures, but PV can also be included
- Guaranteed savings requirement with annual measurement and verification (M&V)
 - This is what distinguishes an ESPC from direct ownership

Common ESPC Structures & Project Cash Flow

- If including PV in an ESPC, the PV can be either government or third-party owned, if third-party ownership is allowable under the applicable state law
- ESCOs typically want minimum project sizes of \$1.0-\$1.5 million



Customer's Savings

ESPC Payment

Utility Costs

ESPC Regulations

- The ability for a city to enter into an ESPC is governed by state law
 - May be refined by local laws/regulations
- Review your ESPC state law and other applicable regulations carefully. Considerations include:
 - What is the maximum allowable term?
 - What types of energy efficiency, solar, or other measures are eligible?
 - Can longer payback items be bundled with shorter payback items?
 - What are the allowable financing options?
 - Savings requirement details
 - What budget categories can be used to make financing payments?
 - Are there requirements or guidelines regarding how the procurement must may be conducted?
- Consult city attorney for law/regulation interpretation (may vary)

Financing an ESPC

- ESPCs require some financing source, either internal or external
- The preferable option depends upon factors such as what is allowable under the ESPC and other applicable regulations; and local market conditions
- Consult appropriate finance and budget department staff
- ESCO may assist with financing
 - May provide financing in limited cases

ESPC Procurement Approach

Determine if your ESPC will be PV-only or PV + efficiency; who will own PV

Issue an RFP for an ESCO

Evaluate responses

Select an ESCO

ESCO conducts an energy audit and develops an implementation proposal

Arrange for project financing

Sign contract with ESCO

ESCO develops projects (PV only or PV+efficiency)

Guaranteed energy savings are measured and verified

ESPC Example

- The city of Lowell, Massachusetts signed an ESPC with Ameresco for energy efficiency, energy management, and PV. The agreement totals \$21.1 million, with \$1.5 million in annual energy savings. The total PV project size is 1.8 MW.
- Ameresco designed, installed, owns and operates 342 kW of PV at 3 schools; City pays Ameresco a discounted electricity rate for the PV production.
- The City signed an additional PPA with Ameresco for 1.5 MW of PV on a landfill.

Lowell, Massachusetts' 1.5 MW solar project on a landfill



Source: <https://www.ameresco.com/wp-content/uploads/2017/07/lowell-ma-case-study-v2.pdf>

Procurement Quick-Reference

Direct Ownership

Do you have access to cash, low-interest debt, and/or grant dollars?

PPA

Do you have no or little upfront capital?

Is the planned PV project larger than 500 kW (alone or through aggregating smaller sites)?

ESPC

Are you planning to upgrade facilities to make them more energy efficient?

Is your planned PV project small?

Knowledge Check #2

What should your city or county do before pursuing an ESPC? Check all that apply.

- A: Check all applicable laws and regulations
- B: Consult your city or county attorney
- C: Contact your state's energy office for resources
- D: Issue an RFP for a solar developer

[Answer: A, B, and C]

Other Financing Options

Other Options

- Hybrid approaches: In many cases, particularly for direct ownership, a combination of financing sources are used. For example, grants, bonds, and other sources. Grant funding can also be used to buy down the cost of a PPA.
- Utility partnerships: For cities with municipal utilities, consider unique contracting arrangements. Partnerships with investor-owned utilities may also be possible, but would likely require regulatory approval.
- Community Solar: Some utilities have a Community Solar program that allows more than one customer to purchase a share of a PV project. If so, a city may want to host and/or buy shares in a community solar project.
 - Be sure to consider the SREC treatment and program structure if pursuing this option.

Procurement Lessons

Elements of Success

- Research financing options in your area and determine what is allowable
- Involve key city staff such as attorney, finance and budget; understand and meet applicable regulations
- Take advantage of state energy office and/or other resources
- Utilize available standardized and approved templates, guidance and protocols; pre-qualified contractors

Regulatory and Contract Issues

- Appropriations Concerns for Long-Term Contracts
 - PPA and lease payments typically require appropriated funds; if the funds are not appropriated, then the local government cannot make the payments.
 - Solutions include clauses that:
 - Acknowledge the risk
 - Provide steps that both the city and the solar developer will take to minimize risk
 - Provide remedies to the developer if the city is not able to make PPA payments
- Voter Approval
 - If issuing bonds, voter approval, or previous bonding authority, will be needed.
- Maximum Contract Terms
 - Local governments may have restrictions on the length of contract they can sign for various types of services, including PV.
 - Discuss the contract length early on in the procurement process.

Knowledge Check #3

What clauses might a city or county PPA need to include?

- Acknowledge the risk of the city or county not appropriating funding for the PPA
- Provide steps that both the city and the solar developer will take to minimize risk
- Provide remedies to the developer if the city is not able to make PPA payments
- All of the above

[Answer: All of the above]

RFP Basics

- Our solar RFP template will be available in June for you to use.
- Key components of a successful solar RFP include:
 - Requiring respondents to provide responses in standard metrics
 - Provide sufficient site information
 - Be precise where necessary

Evaluation Criteria

- Your city or county may have its own criteria or weighting priorities
- Example criteria and weighting:
 - Cost-effectiveness of the proposal 35 points
 - Technical approach and schedule 30 points
 - Company qualifications and experience 20 points
 - Project team experience and approach 15 points

Resources

NREL's PPA Widget Tool

- NREL developed a solar PPA template for New York's K-Solar program. See <http://widgets.nrel.gov/financere/interactive-solar-ppa/#>
- The widget provides contract language along with explanations in plain English of the key terms. For example, there is a section on appropriations concerns.

The screenshot displays two overlapping panels from the PPA widget tool. The top panel, titled "Explanation of Certain Key Terms in the PPA (Draft)", shows a list of terms. The bottom panel, titled "Appropriations", provides a detailed plain English explanation for "Exhibit 4 Section 22o".

Explanation of Certain Key Terms in the PPA (Draft)

o. Appropriation.

i. This Agreement shall be deemed executory only to the extent of the monies appropriated for the purpose of this Agreement, and no liability on account thereof shall be incurred by the Purchaser. All payments made by Purchaser under this Agreement shall be for the purpose of such expenditures and shall not constitute or give rise to a general obligation of the Purchaser for multiple-fiscal year direct or indirect debt or other financial obligation whatsoever. It is understood that no representation by any public employee or officer creates any legal or moral obligation to make available monies for the purpose of the Agreement.

ii. If an appropriation for all or any portion of the monies owed or owing under this Agreement is not made in the final budget approved by the applicable budgetary entity for any fiscal year (despite Purchaser's request therefor or otherwise) whether on a general or special basis, (the "Non-Appropriation Event"), Purchaser shall promptly give Seller notice of such event (the "NAE Notice"); provided, however, that a delay by the applicable budgetary entity in making such appropriation shall not constitute a Non-Appropriation Event unless such delay is caused by Purchaser's acts or omissions. The occurrence of a Non-Appropriation Event shall not constitute force majeure under this Agreement.

Appropriations

Exhibit 4 Section 22o

When entering into a PPA with a public entity, the solar developer faces a risk that funds necessary to pay for services provided under the PPA are not appropriated during a budget period. Under the PPA, if funds aren't appropriated, the solar developer does not have to deliver the electricity to the School District unless or until the funds are appropriated again. During this time, the solar developer may sell the solar electricity generated by the PV system to any third party. If funds are not appropriated for the PPA within 180 days, the solar developer may terminate the PPA. To mitigate the risk to the solar developer during the time when no funds are available to pay for the PPA, the School District agrees not to pay any other utility for electricity used at the School District's facilities. During this time, the School District is also prohibited from signing a new PPA with a different solar developer for the same schools. Finally, the School District agrees to do whatever it is legally permitted to do to obtain funding through appropriations in order to resume payments to the solar developer.

Resources

- PPAs:
 - SEIA’s PPA Template, <https://www.seia.org/research-resources/model-leases-and-ppas>
 - NREL’s PPA Widget, <http://widgets.nrel.gov/financere/interactive-solar-ppa/>
- ESPC/ESCOs:
 - DOE’s Better Buildings ESPC Toolkit <https://betterbuildingsinitiative.energy.gov/energy-savings-performance-contracting-espc-toolkit>
 - State ESPC authority info: Click on “Considering ESPC” and then “Legislative Library”
 - See also “Implementing ESPC Projects”
 - Energy Service Coalition
 - Model ESPC documents: <http://www.energyservicescoalition.org/resources/model-documents>
 - State Energy Office Resources: <http://mojo.naseo.org/members-states>
 - Colorado Energy Office has many [resources on ESPCs](#): Pre-qualified ESCOs, templates, specified audit costs (does not include solar analysis) based on certain criteria such as distance from CO energy office
 - Other websites
 - State ESPC enabling statutes: <http://www.ncsl.org/research/energy/state-energy-savings-performance-contracting.aspx>

Resources

- RFP process:
 - Key Elements of Solar Requests for Proposal, webinar, slide deck and recording: https://www.nrel.gov/technical-assistance/webinars-2013.html#solar_rfp
 - Writing Solar Requests for Proposals (RFPs): Lessons from NREL's University PV Implementation Assistance Program <https://www.nrel.gov/docs/gen/fy16/66369.pdf>
- Solar operations and maintenance (O&M) best practices:
 - NREL's *Best Practices in Photovoltaic System Operations and Maintenance*: <https://www.nrel.gov/docs/fy17osti/67553.pdf>
 - FEMP's *O&M Best Practices for Small-Scale PV Systems* (1.5 hour video training): <https://www4.eere.energy.gov/femp/training/training/om-best-practices-small-scale-pv-systems>; http://www.wbdg.org/pdfs/FTS27_LearnerGuide.pdf
 - FEMP's *Operations and Maintenance for Optimal Photovoltaic System Performance* (5.0 hour video training): <http://www.wbdg.org/continuing-education/femp-courses/femp56>
- Other resources
 - Smart Electric Power Research's Community Solar Program Design Models: <https://sepapower.org/resource/community-solar-program-designs-2018-version>