

Request For Proposals (RFP)

For ~9–13.25 MW AC distribution-scale solar and battery storage
For two electric cooperatives and a university in Texas

RFP released on behalf of:



RFP prepared by:



RFP released:	Friday 5 January 2018
RFP webinar:	Wednesday 24 January 2018, noon-1pm MT
Intent to participate:	Friday 26 January 2018, 5pm MT
Clarifying questions:	Monday 29 January 2018, 5pm MT
Proposals due:	Friday 9 February 2018, 5pm MT

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1. Scope

1.1. Background

Rocky Mountain Institute defines distribution-scale solar as 0.5 MW to 5 MW solar PV connected to the distribution grid. More than 70 MW of distribution-scale solar has been installed, contracted, or offered to contract in Texas in the last 2 years. The primary motivation

for this surge in distribution-scale solar installations is the high economic value for electricity buyers.

This RFP is part of RMI's work with electricity buyers in Texas to facilitate the development of distribution-scale solar. RMI aggregates demand and collects structured price data through a competitive procurement process. As a result of this process, electric utilities and other electricity buyers are able to access easy-to-understand offerings at low prices without the need to invest extensive staff resources.

1.2. About participating electricity buyers

This RFP is issued on behalf of two electric cooperatives and a university (together referred to as "Buyers"):

- Bluebonnet Electric Cooperative
- CoServ Electric Cooperative
- University of North Texas

More details on the Buyers can be found in Appendix A.

Buyers have advised RMI on the scope and specifications of this RFP. Buyers will select the vendor(s) and are responsible for administering and executing the PPAs solicited in this document. Depending on the results of this RFP, participating Buyers may invite other utilities or other electricity buyers in the region into an expanded solar procurement.

1.2. About Rocky Mountain Institute

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Washington, D.C.; and Beijing.

1.3. About Shine

A program of RMI, Shine is focused on unlocking a "sweet spot" in the U.S. clean-energy market: distribution-scale solar (also referred to as community-scale solar or CSS). Shine works with utilities, public agencies, and other buyers to develop innovative distribution-scale projects that make solar energy affordable and accessible for all. This request for proposals (RFP) is part of Shine's ongoing buyer-support program. In 2016, RMI supported procurement of more than 60 MW distribution-scale solar through three RFPs.

1.4. About Texas Energy Aggregation, LLC

Texas Energy Aggregation, LLC (TEA), has helped electricity buyers in Texas to procure affordable electricity since 2002 by negotiating more than 3000 energy contracts. Recently, TEA was awarded a 3-year contract by the Texas State Comptroller to provide energy sourcing services to Texas state agencies. Via this contract state agencies and any other public entity in Texas can access reliable, affordable electricity at low prices directly via TEA, without the need to run an independent competitive procurement. For more information on this contract please visit <http://www.txsmartbuy.com/contracts/view/1911>

1.5. Solar PV and battery storage capacity requested

The purpose of this RFP is to understand the net economic value that Buyers can expect to realize from renewable Distributed Energy Solutions (DERs), specifically solar PV and battery storage. Buyers are currently most interested to procure DERs via service structures, such as a Power Purchase Agreement (PPA), but want to retain the option of outright purchase. This RFP evaluates the benefit of solar PV and battery storage, for the following capacities (please see Appendix B for site details):

Buyer	Solar PV - lower bound (MW AC)	Solar PV - upper bound (MW AC)	Battery storage
Bluebonnet Electric Cooperative	~4	~6	No bids requested at this time
CoServ Electric	~2	~4.25	Bids welcome; sizing set by Bidder
University of North Texas	~3	~3	No bids requested at this time
Total	~9	~13.25	n/a

Bidders are asked to submit bids for solar PV and solar PV plus battery storage (“solar-plus-storage”) in the RFP bidsheet, explained in chapter 2. RMI is not asking for bids for standalone battery storage since our modeling shows that standalone battery storage will be less valuable than solar-plus-storage. This RFP asks for pricing for a single solar-plus-storage system to minimize bid preparation effort by Bidders. If solar-plus-storage is shown to have significant economic value, Bidders may be interested in adding storage to other projects in a later stage.

If a responding vendor (referred to as “Bidder”) sees other configurations of Distributed Energy Resources (DERs) that can provide additional economic savings to the Buyers, and the Bidder has the capacity to provide these technologies on a contract basis, there is room to suggest these options in tab 15 of the RFP bidsheet.

1.6. Schedule

A summarized schedule is below. For more details, please see section 2.4.

Project Milestone	Date
RFP released (round 1)	Friday January 5th, 2018
RFP webinar	Wednesday January 24th, 2018, noon-1pm MT
Deadline for intent to participate	Friday January 26th, 2018
Deadline for clarifying questions from Bidders	Friday February 2nd, 2018
Proposals due (round 1)	Friday February 9th, 2018
Communicate round 2 selection to Bidders	Monday February 26th, 2018
Meeting with round 2 Bidders and Buyers	March 5-9th, 2018 (exact date TBD)
Round 2 proposals due	April 2018
Selection of winning vendor(s)	May 2018
PPA negotiation	June—July 2018
COD	2019 (option for 2020 COD pricing included in RFP bidsheet)

1.7. Design philosophy of this RFP

This RFP is designed to maximize net value to participating Buyers. Accordingly, this RFP incorporates best practices from previous RFPs by RMI and others and solicits a set of data to help Buyers make informed decisions on vendor(s) and terms. Some of the key design features:

1.7.1. Aggregation of individual projects into a portfolio

Recent RFPs managed by RMI verify that electricity buyers can access community-scale solar at lower costs by aggregating individual projects into a portfolio of projects. In this RFP, 3 Buyers have aggregated demand for a total of ~9–13.25 MW across 10 sites. RMI’s intention is to select a single Bidder for all (solar PV) projects. In addition, Buyers will seek to use an industry-standard PPA document, that Buyers can commit to sign with the winning Bidder independently.

1.7.2. Option to expand portfolio

Additional Buyers in Texas may want to participate in a group solar procurement if prices received in this RFP are attractive. To prepare for this possible outcome, RMI is collecting price

data for potential portfolios of 20 and 40 MW. Buyers will decide after RFP Round 1 if they can and want to invite other regional buyers to participate in this RFP.

1.7.3. Comparable bids via standard assumptions

Round 1 of this RFP is designed to solicit firm bids given the assumptions on project and development costs provided by RMI. Bidders should base prices only on the assumptions provided in Appendix B. RMI will tolerate bid changes in Round 2 only as a result of changed assumptions, e.g. interconnection costs or different geotech information. Bidders can share suggestions on improving assumptions in tab 15 of the RFP Bidsheet. Bidders should not reach out to landowners nor estimate costs based on other available data (see 2.1.6 for further details and consequences). This approach has three primary benefits:

1. All parties avoid a land-rush scenario in which multiple bidders are contacting the same landowners and driving up land prices.
2. Bids are easily comparable (apples to apples).
3. Data gathering and modeling efforts by Bidders to participate in the RFP are minimized.

1.7.4. Utility-supported development

Recent RFPs managed by RMI have shown that the cost to deliver projects decreases when electricity buyers actively support development. In this RFP, Buyers will support development for certain sites by providing land and supporting interconnection. For example, the majority of project requests are for locations in which the Buyer is providing the land at no cost in exchange for a lower solar PPA price. Similarly, most Buyers only ask Bidders to pay for the interconnection studies, but will privately pay for the interconnection costs to the low-voltage side of the transformer.

1.7.5. Maximizing net value, not just minimizing costs

The intent of this RFP is to maximize net value for Buyers, not just minimizing costs. All Bidders are expected to answer this RFP with the lens of maximizing net value. More details on the different value streams that the buyers in this RFP consider are in section 2 of this document and Appendix C. More details on evaluation methodology are in section 3 of this document.

2. Instructions to bidders

2.1. Clarification of terms of this RFP

2.1.1. Buyer non-obligation

Nothing contained in this request for proposals (RFP) shall be construed to obligate Buyers to select any proposals or to limit the ability of Buyers to reject all proposals. Buyers reserve the right to withdraw and terminate their participation in this RFP (either individually or collectively) at any time prior to the execution of a contract.

2.1.2. Acknowledgement and acceptance of terms and conditions

The submission of a proposal shall constitute a Bidder's acknowledgement and acceptance of all terms, conditions, and requirements of this RFP. This includes terms specified in the main RFP document (sections 1 through 3 of this document) as well as Memorandum Of Understanding (MOU) terms specified in Appendix D. The MOU's terms and conditions are broad, so acceptance of these terms will be similarly broad. If Bidder has reasonable grounds to reject any terms or conditions, Bidder must identify problematic terms in RFP bid sheet, tab 8. Inability to accept a term or condition will not necessarily disqualify Bidder.

2.1.3. Right to use responses

Subject to 2.1.4., all proposals submitted to RMI and Buyers pursuant to this RFP shall become the exclusive property of RMI and Buyers and may be used for any internal, confidential, and reasonable purpose by RMI and Buyers. Intellectual property rights in the content of the proposal (or at least the designs submitted) will remain with Bidders, and RMI and Buyers will have a non-exclusive royalty-free non-transferable license to use the intellectual property rights in the proposals for purposes of evaluating the bids.

2.1.4. Confidential content

RMI and Buyers shall consider materials provided by Bidders in response to this RFP to be confidential only if such materials are clearly designated as "Confidential." Bidders should be aware that their proposal, even if marked "Confidential," may be subject to discovery and disclosure in regulatory or judicial proceedings that may or may not be initiated by Buyers. Bidders may be required to justify the requested confidential treatment under the provisions of a protective order issued in such proceedings. If required by an order of an agency or court of competent jurisdiction, RMI or Buyers may produce the material in response to such order without prior consultation with the Bidder. RMI intends to analyze and communicate RFP response data in aggregate for research purposes, but RMI is committed to respecting Bidder confidentiality and will not publicly disclose individual responses without Bidder's written permission.

2.1.5. Responsibility for taxes and other charges

Bidders shall be responsible for all costs and issues associated with bids; contract negotiations; completion of the contract; all taxes, duties, fees and other charges associated with the delivery of capacity and energy under the contract; and compliance with all local, state and federal laws that may affect the contract. Each party shall bear its own costs associated with the preparation of its bids.

2.1.6. Non-contact with landowners

To avoid a land-rush scenario, bidders must refrain from contacting landowners in responding to the RFP. If a Bidder disregards this provision and contacts a landowner, bidder may be disqualified from this RFP and from all future RFPs managed by Rocky Mountain Institute. If

bidder has previously been in contact with landowners in the region, bidder must complete Appendix F and submit to RMI at the time of notice of intent to participate.

2.1.7. RMI cost recovery and non-circumvention

Bidders have asked RMI and TEA to manage the procurement process and have agreed to RMI and TEA recovering costs for its efforts through a \$0.015/W-DC cost-recovery fee on solar PV nameplate capacity. By submitting a bid, Bidders agree with this fee and consent not to transact with Buyers until 3 months after RMI and TEA’s Round 2 prices are announced to Buyers, or until 3 months after a Buyer decides to withdraw from the process (see 2.1.1).

2.2. Values of solar PV and battery storage

The purpose of this RFP is to maximize value of distributed energy resources (DERs) for Buyers, specifically solar PV and battery storage. This section clarifies which value streams the Buyers consider for each of their projects. Bidders should consider these values when they’re sizing and modeling the economic value of their bid.

The table below provides a schematic overview of the value of solar PV for different buyers. RMI is providing a financial evaluation model, vetted by the Buyers, available for download with the RFP and the RFP bidsheet at www.rmi.org/shine. For detailed quantitative values for each of the value streams below, please refer to this financial evaluation model. More detail on each value stream is provided in Appendix C of this RFP.

	Bluebonnet	CoServ	UNT: BTM	UNT: FTM
Avoided energy costs (wholesale)	X	X		X
Avoided energy costs (utility tariff)			X	
Energy arbitrage (applies only to storage)		X		
Avoided 4CP transmission demand charges	X	X		X
Avoided G&T generation demand charges		X		
Avoided hedge contract cost premiums	X			X
Avoided ERCOT administration cost adders	X	X		X
Deferred substation upgrades	X			
ERCOT Emergency Response Services (ERS) (applies only to solar-plus-storage)		X		
Backup power (applies only to storage)	not considered			
Ancillary services	not considered			
Avoided transmission upgrades	not considered			

For Bidders to size battery storage in the solar-plus-storage bids, we provide quantitative data for each value stream. For energy arbitrage, we provide historical hourly load zone prices in the RFP bid sheet. For avoidance of transmission and generation capacity demand charges, we inform bidders in tab 13 of the RFP bidsheet of the suggested hours to dispatch the battery. Historic value for reserved ERS capacity are included in RFP bidsheet tab 13 as well as the financial evaluation model.

As explained in section 1.7.3., this RFP provides standard assumptions for Bidders to model the cost of solar PV and battery storage. Please use the assumptions per site in Appendix B: Sites And Cost Assumptions.

2.3. Response instructions

Bidders will submit responses using the Excel spreadsheet that can be downloaded via www.rmi.org/shine, titled “Shine Texas RFP bidsheet”.

Bidders’ responses must conform to the instructions, structure, and format of the Excel RFP bidsheet. In doing so, bidders are asked not to change the format and structure of the Excel documents and to provide all quantitative data in the units requested. All responses should be made in cells highlighted in light yellow.

Bidders are welcome to provide additional information where appropriate and needed. Bidders are strongly advised not to submit generic sales material.

2.4. Process schedule

2.4.1. Intent to participate

Please confirm your intent to participate no later than **Friday January 26th, 5:00pm Mountain Time**. Bidders can confirm their intent to participate by notifying Titiaan Palazzi (shine@rmi.org) via email, with email subject “[Bidder Name] intends to participate in Shine Texas RFP”, e.g. “DevCo intends to participate in Shine Texas RFP”. The email body can be left blank. Any disclosures of previous contact with landowners (Appendix E) should be submitted at the time of notification of intent to participate.

2.4.2. Questions and answers

All questions and clarifications should be directed to RMI and not to Buyers. Bidders will have the opportunity to ask questions through email during the RFP process. Responses to questions will be provided to all bidders concurrently and posted online at www.rmi.org/shine. The identity of the bidder that submitted the question will be confidential.

Please send all questions and clarifications to Titiaan Palazzi (shine@rmi.org) with email subject “Shine Texas RFP Q&A”. RMI will post answers to all Bidders’ questions at www.rmi.org/shine on a weekly cycle (i.e., within 5 business days).

RMI will not respond to questions received after **Friday February 2nd, 5:00pm Mountain Time**.

2.4.3. Final submission and submission fee

Please submit your proposal online at www.rmi.org/shine by **Friday February 9th, 5:00pm Mountain Time**. The proposal should include:

1. A completed RFP bidsheet (Excel document)
2. Signed copies of Appendix F. (Appendix E should have been submitted with Intent To Participate email.)

The fee per submission is \$500. This fee is intended to cover the marginal cost of processing and evaluating an individual submission. The fee does not cover the general cost of managing the procurement process (those costs are recovered partially through philanthropic donations and partially through TEA and RMI's \$0.015/W-DC cost-recovery fee). Electronic payment can be completed via Paypal at the proposal submittal portal (www.rmi.org/shine). Evidence of payment (screenshot of payment screen) should be submitted along with RFP submittal.

2.4.4. Process after closing of RFP

This RFP will be conducted in two rounds. This RFP starts the first round. Based on all bids, the Buyers, with support from RMI, will select approximately five bidders to continue to a second round of the RFP. Before the second round of this RFP, the Buyers will provide Bidders with all details required for firm and binding bids.

3. Evaluation criteria

3.1. Net Present Value to Buyer

3.1.1. Introduction to RMI's Financial Evaluation Model

Rocky Mountain Institute has developed a financial evaluation model to calculate the value of solar PV and solar-plus-storage to Buyers. This model is available at www.rmi.org/shine, together with the RFP and the RFP bidsheet. This model quantifies the values listed in section 2.2 of this RFP. The purpose of sharing this model is so that Bidders can use it to submit bids that maximize the net value to Buyers.

This model is set up to evaluate the net present value to the Buyer per project. Most input assumptions have been populated by the Buyers. Bidders are required to enter resource hourly production profiles and contract prices.

The Dashboard tab (see next page) shows a graph of each of the revenue and cost streams for Buyers for the next 20 years for a given site. Bidders can choose a different site in Cell H22 on

the Dashboard tab. Cell B11 shows the net present value of solar PV or solar-plus-storage to the buyer.



Figure 1: Screenshot of RMI's financial evaluation model, showing the annual projected value and cost streams for a set of assumptions.

Bidders may for instance want to model the difference in net value between a fixed-tilt system and a single-axis tracking system, by pasting 8,760 profiles and solar PPA prices in RMI's financial evaluation model.

3.1.2. Required inputs

To estimate the value of solar PV or solar-plus-storage, Bidders must paste an hourly production profile of solar PV (often referred to as an 8,760) per site in the "INPUTS Production" tab of the financial evaluation model.

For solar PV, Bidders are asked to submit PPA prices in the "INPUTS Menu" tab of the financial evaluation model. For solar-plus-storage, Bidders are asked to also submit the solar-plus-storage contract price (in \$/kWh-DC-month). This contract price comes on top of the PPA payment for solar PV.

The "INPUTS Menu" tab also requires Bidders to submit annual degradation numbers for solar PV and battery storage. Bidders can change the development timeframe in the "INPUTS General" tab.

3.1.3. Sharing results in the RFP bidsheet

For every project in every bid (e.g. 0.99 MW solar PV at Bluebonnet's Shadow Glen substation in Developer A's bid) Bidders are asked to submit the expected NPV for Buyers. NPVs can be calculated using RMI's financial evaluation model.

NPVs for solar PV can be submitted in column AA of tab 9. NPVs for solar-plus-storage can be submitted in column Z of tab 11.

Bidders are also asked to submit production profiles for all projects into the RFP Bidsheet. Solar-only 8,760 profiles be submitted in tab 12. It is possible to directly copy-paste these from the Financial Evaluation Model. A single solar-and-storage 8,760 profile for CoServ can be submitted in tab 13. We ask for a single hourly production profile for solar-plus-storage to limit the amount of time bidders need to spend in optimizing solar-plus-storage dispatch in round 1. More projects may desire complimentary storage if economics are favorable.

Buyers have provided input assumptions for the projects in the Dashboard tab. Buyers hold the right to modify these assumptions to conduct sensitivity tests on the value of the designs for different external conditions.

RMI will evaluate all solar PV bids and solar-plus-storage bids by NPV to create lists of highest-value bids per project and highest-value bids for the overall portfolio.

3.2. Ability to deliver

In addition to evaluating each bid for net value to Buyers, Bidders will be evaluated for ability to deliver. RMI has developed a quantitative scoring matrix that evaluates:

- Past development experience
- Specific development and EPC experience with co-ops and in ERCOT
- Ability to attract financing
- Ability to deliver projects on time and budget

Bidders must demonstrate ability to deliver to pass the initial screen. RMI will not recommend Buyers to shortlist Bidders without excellent ability to deliver, even when bids show high potential value (as described in section 3.1.)

3.3. Product quality

Bidders are asked to provide input on hardware quality and warranties in tab 7 of the RFP bidsheet. Tier 1 solar PV modules are strongly preferred. UL-listed hardware is required. Inverters must comply with latest IEEE 1547.

3.4. Design and engineering

Rocky Mountain Institute does not require designs of solar PV or solar-plus-storage systems in round 1 of this RFP. One of our goals is to minimize the transaction costs for Bidders to respond to this RFP. For that purpose, it is not necessary for Bidders to create designs.

Appendix A: Background On Buyers

Bluebonnet Electric Cooperative

Founded in 1939, Bluebonnet is now one of the largest electric cooperatives in Texas, serving 95,000 meters. Bluebonnet serves people and businesses in 14 Central Texas counties situated between San Antonio, Austin, and College Station.

CoServ Electric

CoServ's Mission is to deliver excellent service to Members and Customers by providing safe and reliable energy solutions. Established in 1937 as Denton County Electric Cooperative, CoServ Electric is based in Corinth and serves more than 220,000 meters across Denton, Collin and four other counties in North Texas. CoServ's natural gas affiliate, CoServ Gas, serves over 110,000 meters.

University of North Texas

The University of North Texas (UNT) is a major public research university deeply committed to advancing educational excellence and preparing students to become thoughtful, engaged citizens of the world. This is accomplished through a broad and balanced array of programs where well-prepared students and dedicated scholars and artists collaborate with our local and global communities in the creation, integration, application, and dissemination of knowledge. In this way, UNT creates an enriched and sustainable future for our students, state, nation and world.

Appendix B: Site And Cost Modeling Assumptions

For an overview of all sites, please use this Google map: <https://goo.gl/uaApSk>

Electricity off-taker	Bluebonnet				CoServ				UNT	UNT
	Maxwell Service	Gay Hill Substation	Shadow Glen Substation	Chappell Hill Substation	Oak Point Substation	Cross Timbers Substation	Custer Substation	Roanoke Substation	Discovery Park BTM	Discovery Park FTM
Project name										
Latitude	29.873879	30.271017	30.357072	30.138624	33.1949	33.0486	33.16	33.0258	33.25391	33.25961
Longitude	-97.808542	-96.471847	-97.535265	-96.325334	-96.9702	-97.2066	-96.752	-97.2665	-97.15282	-97.15851
Solar requested - lower bound (MW-AC)	0.99	0.99	0.99	0.99	0.99	0.5	0.25	0.25	0.99	1.98 (2x 0.99)
Solar requested - upper bound (MW-AC)	1.98 (2x 0.99)	0.99	1.98 (2x 0.99)	0.99	1.98 (2x 0.99)	0.99	0.25	0.99	0.99	1.98 (2x 0.99)
Site type	Land owned by co-op, available at no cost to Bidder	Land owned by co-op, available at no cost to Bidder	Substation, site not identified	Substation, site not identified	Land available at no cost to Bidder	Land available at no cost to Bidder	Land available at no cost to Bidder	ROOFTOP available at no cost to Bidder	Land owned by university, available at no cost to Bidder	Land owned by university, available at no cost to Bidder
Land cost (\$/acre-year lease)	0	0	\$19,000	\$2,800	0	0	0	0	0	0
Interconnection costs (\$)	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Site acreage	~10 acres in south corner may be most suitable for solar, split by pipeline easement. Alternative may be to build in the northwest of the parcel, however parcel is less level there.	8.5 acres for total parcel; 2.1 acres occupied by substation and road; ~6.0 acres suitable for solar wrapping 3/4-way around substation	n/a	n/a	12 acres	18 acres	1.5 of 1.7 acres of land at substation closest to Independence Parkway (0.2 acres reserved for entrance road).	>10 acre, flat, rectangular rooftop on well-constructed and new commercial building.	>20 acres	>100 acres
Soil type	Heiden clay	Mostly carbengle clay loam and wilson clay loam, with some fine sandy loam.	Assume all clay	Assume all clay	Top 10-20 feet is clay, with some shaly clay below 10 feet, and some seams of sand.	Top 6 feet of very stiff sandy clay, very stiff to hard clay below 6 feet.	Top 2-3 feet of clay, tan or gray limestone below.	Top 2 feet of sand, sandy clay below till 20 feet.	Sandy clay loam top 6 feet, unknown below	Sandy clay loam top 6 feet, unknown below

Site conditions	Southern-most corner has only smaller shrubs (max 8 feet).	Pastureland adjacent to the substation, undeveloped. A few medium-sized trees (~30 feet tall) on periphery.	n/a	n/a	Cleared land; grassy. A couple of trees.	Pastureland	Cleared land; grassy	ROOFTOP array. Building is in use.	There are some scrub trees throughout the site that would need to be cleared	There are some scrub trees throughout the site that would need to be cleared
Features on site	Transmission line on southeastern edge along TX-142 and pipeline easement through southeast of parcel. Bluebonnet will develop building in Eastern part of the site,	Site has overhead wires coming in three different directions. Ground-fixed distribution poles next to substation in 3 locations.	n/a	n/a	None	None	Shade from substation and substation area fence must be considered.	Rooftop has few features other than sporadic air handling units. Roof is single-level.	None	None
Water drainage close to site	No, but contains old cattle drinking ponds in northeastern area.	No	n/a	n/a	Yes, small creek on adjoining property ~50 yards south of site (creek does not cross site).	Yes, site includes existing farm tank and normally dry drainage.	No	No	No	No
Slope	Southern corner with >15 acres has modest ~4% avg. slope toward the southwest with modest undulations.	Average slope of ~4%. Modest undulations.	n/a	n/a	Avg. slope of 6%, mainly rising to east.	Flat	Avg. slope of 2%.	Flat, ROOFTOP.	Average slope of 2%, varies between 0 and 5.7%.	Average slope of 3.6%, varies between 0 and 5.7%.
County property tax (% of value)	2.05% for improvement	1.75% for improvement	3.07% for improvement and land	1.70% for improvement and land	2.32% for improvement	2.12% for improvement	2.18% for improvement	2.18% for improvement	2.41% for improvement and land	2.41% for improvement and land

Other assumptions, equal for all sites:

- An overview of all sites in Google Maps is here: <https://goo.gl/uaApSk>
- UNT's Discovery Park: FTM site is a project request for a solar array to be built on the distribution grid of Denton Municipal Energy, UNT's power provider

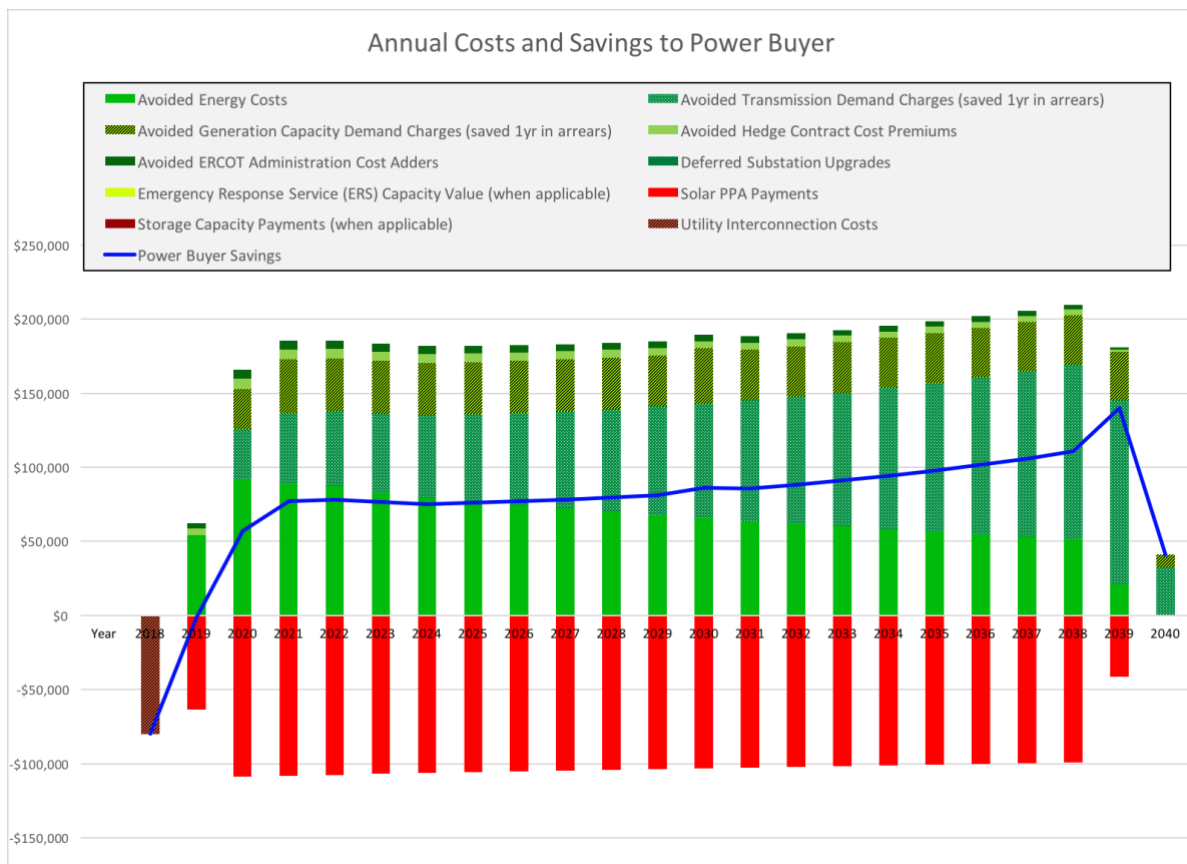
- All projects are ground mount, with the exception of CoServ's Roanoke substation site (this will be on top of a large warehouse less than 10 years old). Upon request, Bidders may be allowed to exclude this site from their bid without a negative impact on evaluation.
- When modeling PPA prices, please provide prices for 5 portfolio assumptions—individual project; 8 MW AC, 12 MW AC, 20 MW AC, and 40 MW AC portfolios. See tab 10 of the RFP bidsheet for more information.
- All PPAs should be offered with maximum 20-year PPA, 0% escalator. Bidders are responsible for operations and maintenance.
- Expected COD is before end of 2019. In tab 11 of the RFP bidsheet you can submit a PPA price if COD is delayed till end of 2020.
- For all sites owned or controlled by the Buyers, no land lease is necessary. Site will be made available at no cost to Bidder.
- Permitting happens with counties; none of the requested sites are on subdivisions. Winning Bidders does not have to tell the county.
- Environmental impact assessment: not completed, assume no issues. No site is a habitat for endangered species, and there are no known or probable archaeological findings on any site.
- Geotechnical studies: please use the information in the table above. No detailed geotech is available in this round. You can assume piles can be driven easily to 12' with typical reject rates.
- Bidders are asked to pay only for interconnection cost studies. Please assume \$20,000 per site. All interconnection hardware to the low-voltage side of the transformer will be paid for by the Buyers.
- All sites are outside the 100-year floodplain.
- All sites have good access to roads. No site requires development of any access road.
- Title survey will take place after Round 1. Please assume that the site belongs to the owner specified in the table above.
- Each vendor should model a \$0.015/W-DC fee for RMI, \$0.005/W-DC due upon PPA signing, \$0.01/W-DC due upon COD. This fee will be paid only by the winning vendor.
- Electricity off-takers have a strong preference for top-tier modules, inverters, racking systems, and tracking systems (if included in proposed project).
- Electricity off-takers do not have a preference for fixed-tilt versus single-axis tracking solar PV. However, RMI's financial evaluation model indicates that systems with high production during late afternoon summers create a disproportionate amount of value. Bidders can use RMI's model to identify the highest net value system design.
- Electricity off-takers require the associated RECs.

Appendix C: Details on Values

RMI has shown for many years that distributed energy resources (DERs) can provide a wide array of values¹. The values listed below are the values explicitly quantified in this RFP from the perspective of the power buyer. This is not an exhaustive list of potential costs or benefits to the power buyer.

Other values of the projects—such as perceptible benefits to the community or potential economic benefits accruing on the retail side of any of the front-of-the-meter (FTM) projects—are assessed by buyers separately and not analyzed quantitatively by RMI in bid evaluations.

Annual analysis of the six values for a solar-only FTM project PPA is shown in the graph below. This chart is only an illustrative example, and thus actual value quantities are not exactly as they are for the buyers in this RFP. Green columns indicate positive cashflows, red columns indicate negative cashflows.



¹ Documented in depth as early as the 2002 with the RMI publication "[Small Is Profitable](#)," co-authored by a former Texas PUC Commissioner.

Other values, such as backup power and ancillary services, are not quantified in the first round of this RFP.

1. Avoided Energy Costs (Wholesale Market or G&T Utility Tariff)

- This is the volumetric energy cost that would otherwise be incurred by power buyers without solar PV production.
- For years in which utility buyers (i.e. FTM projects) are projected to have merchant load exposure, rather than a pre-negotiated utility contract, ERCOT load zone settlement point prices are used.
- Additional costs associated with wholesale power production are either bundled within the utility tariff, or when merchant load exposure is analyzed, typical cost adders for wholesale power contracts are calculated separately under category 4 and net avoided ISO/RTO costs are calculated separately in category 5.

2. Avoided Transmission Demand Charges

- This value is applied as a separate value to FTM projects.
- In ERCOT, all transmission is paid for by load serving entities (LSEs), determined by their load coincident with the peak load on ERCOT's grid. The tariff term is "coincident peak" or CP, and is determined annually.
 - ERCOT uses a "4CP" system (4 Coincident Peak)
 - Load serving entities have their CP determination based on the average of the highest 15-minute load periods during each of the four summer months, June, July, August, and September.
 - Generation from distribution-tied projects below 1 MW AC capacity reduce the net-load value used by ERCOT in determining a load serving entity's peak.
 - Value accrues to utility the year after the 4CP net-load reductions are achieved, when ERCOT recalculates each load serving entities' share of system peak.

3. Avoided Generation Capacity Demand Charges

- This value is applied as a separate value only to CoServ's projects.
- Throughout the US, many distribution-level, load-serving cooperative utilities are under contract to generation utilities to provide a primary group of distribution-level cooperatives power. Often these generation utilities are cooperatives themselves, referred to as "G&T" cooperative utilities, usually with the distribution-level cooperatives comprising most or all of the board of the G&T cooperative serving it.
 - CoServ is a member of Brazos Electric Cooperative, a G&T utility.
 - Brazos Electric Cooperative applies a demand-based charge (similar to value stream (2) above) to recover the capital costs of the generation assets it invested in on behalf of its members.
 - However, the peak for Brazos EC's generation cost recovery is the peak on Brazos' transmission system, not the overall ERCOT peak.

- Generation from distribution-tied projects may reduce the net-load value used by Brazos EC in determining a load serving entity's peak.
- Value accrues to utility the year after the the G&T net-load reductions are achieved, when the G&T utility recalculates each retail, distribution utility's share of system peak.

4. Avoided Hedge Contract Cost Premiums

- This value is applied as a separate value to FTM projects when not on a set utility tariff.
- Load-serving utilities commonly protect themselves from market risk via forward physical delivery and derivative contracts. These bundled of protective contracts are described herein as "hedge contracts."
- The contracted power from this RFP's projects would eliminate these hedge contract premiums along in correlation with the energy value offset (i.e. both offset per MWh).
- Hedge contracts contain transaction close costs, forward-over-future premiums (note: potentially, but more rarely, negative, i.e. a credit rather than premium), power seller margins, and other cost-adders over pure wholesale power futures.

5. Net Avoided ERCOT Administration Costs

- This net value is applied as a separate value to FTM projects when not on a set utility tariff.
- Generation from distribution-tied projects below 1 MW AC capacity enable reduction of load-serving utility net-load, and thus additional costs levied and benefits awarded by ERCOT by MWh of load served, include:
 - (Cost) ERCOT ancillary service system costs
 - (Cost) ERCOT administration fees
 - (Benefit) ERCOT Congestion Revenue Right (CRR) funds add-back

6. Deferred Substation Upgrades

- This value is applied as a separate value only to Bluebonnet EC projects.
- Substations approaching their transformer-rating load carrying capacity require transformer upgrades.
- Generation from distribution-tied projects that is coincident with peak load on the distribution substation to which its distribution feeder line is tied, lowers net-load and defers the need for substation upgrades.
- The value of any year of deferment is the capital cost of the project multiplied by the cost of capital of the utility, with this conceptual "interest balance" growing in each year of additional deferment.

7. Utility Interconnection Costs

- This value is applied to all FTM projects.
- Utilities generally bear some cost in interconnecting distribution-level FTM projects as well as possible pre-project-COD additional upgrading of lines or substations to manage the project's impact on their grid.

- *Utilities are generally reimbursed for these costs by their full customer base (i.e. rate base), but cooperative utilities are a collection of their customers/members, and thus this is considered a true additional cost the utility.

8. Emergency Response Service (ERS)

- This is a potential value for all projects that include storage.
- This value is primarily capacity based. Energy value is received only when the ERS capacity is called to perform.
- ERCOT procures ERS from distribution-tied projects to make themselves available for deployment in an electric grid emergency (threat of rolling blackouts, not standard local grid outages).
- ERCOT procures ERS three times annually for four-month Standard Contract Terms (SCT).
 - In each SCT, ERCOT procures ERS according to two different response times—thirty minutes to begin response ("ERS-30") and ten minutes to begin response ("ERS-10")--and two different technology types, Weather-sensitive (WS) and Non-weather-sensitive (NWS). Thus, these variations create 4 ERS products, all with different pricing:
 - (1) WS ERS-10
 - (2) WS ERS-30
 - (3) NWS ERS-10
 - (4) NWS ERS-30
 - The likely product to be utilized by projects in this RFP is **NWS ERS-10**.
- In the provided model with the RFP, RMI has assumed its most conservative reading of the ERCOT rules, requiring a minimum of 12 hours of available dispatch during periods for which ERS capacity is offered. We encourage respondents to review ERCOT's rules independently and come to their own conclusions. If Bidders use less than 12 hours of battery reserve in any hour for which ERS capacity has been offered, please provide a short rationale in tab 13 of the Shine Texas RFP Bidsheet.

Appendix D: Draft Memorandum Of Understanding

The following term sheet outlines terms to be included in a memorandum of understanding between RMI and the selected Bidder(s). This should be executed prior to PPA signature.

I. RMI Responsibilities	
After RFP but before PPA signature	<ul style="list-style-type: none"> - Provide tools and advice to support Buyer decision-making. - Facilitate communication between Buyers and Bidder. - Work with Bidders and Buyers to refine pricing. - Support Buyers and Buyers' attorneys in contracting/negotiation.
After PPA signature	<ul style="list-style-type: none"> - Monitor Bidder and project performance. - Intervene on behalf of Buyer as needed.
II. Vendor Responsibilities	
After RFP but before PPA signature	<ul style="list-style-type: none"> - Provide transparent communication with RMI and Buyer staff. - Lead project development and PPA contracting.
After PPA signature but before commissioning	<ul style="list-style-type: none"> - Update RMI on development activities and challenges - Allow RMI to monitor construction and site preparation activities
After project commissioning	<ul style="list-style-type: none"> - Provide access to 15-minute increment system performance data by providing Buyers access to data files with no more than 24 hour offset between real-time and data availability.
III. Joint Commitments	
Joint commitments	<ul style="list-style-type: none"> - Meet regularly to discuss Buyers' needs and required actions. - Work together for projects related to this RFP
IV. Payment	
Amount and milestones	\$0.005/W-DC at PPA signature \$0.010/W-DC at on-site commencement of construction
Timing of payment	Payment received by RMI within 30 days of milestone achieved
V. Disclosure and Press/Media	
RMI's right to disclose commercial terms in press release	RMI retains the right to disclose commercial terms in a press release. These terms may include: price rounded up to the nearest whole number; PPA duration and escalator; details on utility-role in supporting development; presence or absence of local incentives.
Confidentiality and non-disclosure	Beyond the disclosures protected in press release, RMI agrees to protect confidentiality by not disclosing additional details on the project or Bidder.

Appendix E: Contact With Landowners

CoServ and UNT own or control sites for the locations in which they consider solar PV and/or battery storage. Bluebonnet can provide sites at 2 of the locations in which they consider solar PV, but Bluebonnet does not make land available surrounding Shadow Glen or Chappell Hill substations.

To avoid a land rush in Bluebonnet territory, **Bidders are asked to refrain from contacting any landowners in responding to this RFP.**

RMI recognizes that some bidders may have pre-existing relationships with landowners and that bidders should not be disqualified for pre-existing relationships. Bidders are however required to disclose those pre-existing relationships by completing the following document.

Instructions: Please disclose any discussions regarding land lease or purchase that occurred within the past 18 months with landowners in the vicinity (i.e. within two miles) of the Shadow Glen and Chappell Hill substations in Bluebonnet territory.

1. Please summarize previous contact with landowners in the region.

2. Where are the sites located?

3. What agreements have been made or are pending?

RMI may follow up to better understand the nature and level of maturity of these relationships.

Appendix F: Bidder Acknowledgement And Consent

All Bidders are requested to initial, sign and submit a scanned copy of this page along with their RFP submittal.

Name of organization ("Bidder"): _____

1. Bidder acknowledges and consents to terms and instructions listed in the body of this RFP document (pages 3–14).

2. Bidder agrees to 2.1.6 of this RFP (*non-contact with landowners*), and if Bidder has had previous contact with landowners, then bidder has disclosed nature of those relationships as instructed in Appendix E.

3. Bidder agrees to 2.1.7 of this RFP (*RMI cost recovery and non-circumvention*).

4. Bidder has faithfully modeled and submitted firm prices using the assumptions provided by RMI and Buyers. Wherever assumptions have not been provided, Bidder has used realistic assumptions that are consistent with expected costs and constraints.

5. Bidder has reviewed memorandum of understanding term sheet between RMI and winning vendor (Appendix D) and either consents to all terms or has provided comments on proposed terms in Excel spreadsheet.

Signature: _____

Date: _____