

CITY OF MADISON, WI

PHOTOVOLTAIC ASSESSMENT MODEL

April 2013



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Energy and Utilities



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Baker Tilly is the 8th largest accounting network worldwide

- > Top 20 largest firms in the U.S. consisting of more than 1,400 professionals
- > Established in 1931
- > Offices throughout the Midwest and East Coast
 - Wisconsin
 - Chicago
 - Detroit
 - Minneapolis
 - New York
 - Washington DC



Our renewable group serves clients in the following industries:

Utilities

- > **Nationwide energy practice:** More than 40 years experience and over 300 energy and utility clients nationwide - electric, water, waste water, storm water, and gas utilities

Renewable Energy Developers

- > **Dedicated Renewable Energy Group:** Focused on development and financial solutions to get projects to the finish line in a way that maximizes client value and minimizes risk. We are currently working with more than 40 active projects representing 1,500 MW.

Manufacturers and Food & Beverage

- > **Seventy-five years serving manufacturers:** We serve more than 2,300 manufacturers and wholesale/distributors with over 230 in the Food and Beverage industry.

State and Local Government

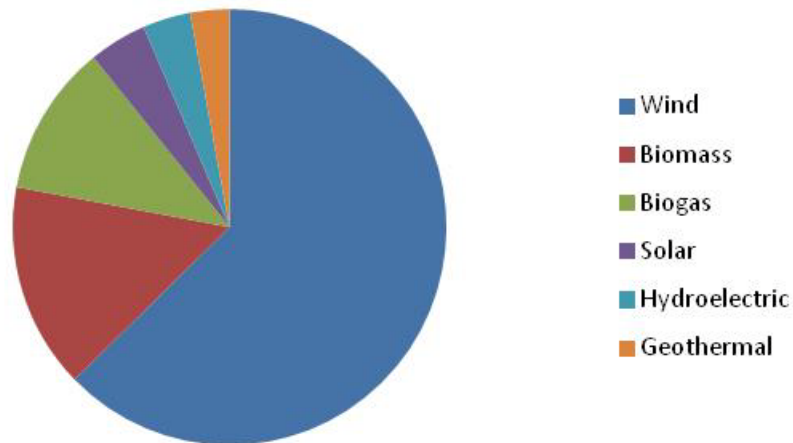
- > **Work closely with municipalities and other non profits:** Experience with municipal/government leaders allows us to understand diverse perspectives. We work with more than 150 higher education and research institutions across the United States.

Our role:

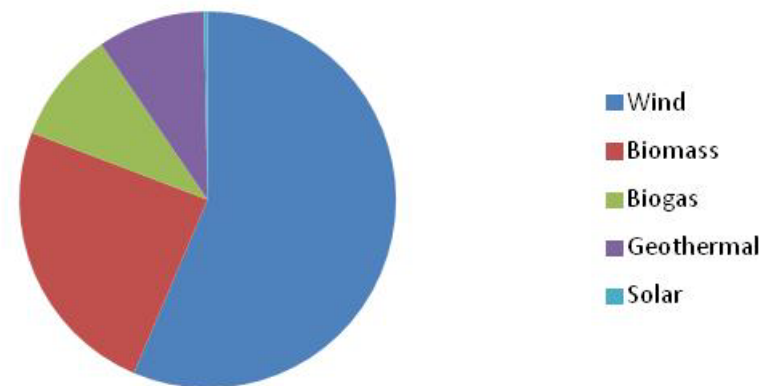
- > Accessing Federal Incentives (ITC, PTC, 1603 grants, NMTC's)
- > Development Support
 - Feedstock agreements, PPA's, heat sale agreements, etc.
 - EPC, O&M and Technology procurement agreements
 - Permitting Support
- > Financial Advisory and Funding Procurement
 - Debt, Subordinated Debt/Mezzanine, Equity
 - Tax Equity
 - TIF and other site-specific funding
- > Tax and Assurance
 - Cost Segregation and Strategic Tax Support
 - Attestation Support

Since 2008, Baker Tilly has been involved with over \$1.9 billion of renewable energy projects that have been funded and are either operating or under construction

\$1.96 B in Total Projects



\$617 M Projects - BT Involved with Capital Procurement



Madison PV Assessment Model

Contents



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3. Load Profile Assessment and Utility Interface
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 - a. Additional Implementation Considerations / Analysis

1. Nature of Services Provided

Overview of Project Scope and Approach

- > Baker Tilly was engaged by the City of Madison to assist in the development of an assessment model and high level framework to evaluate solar potential at identified sites owned by the City, County, and Madison Metropolitan Sewer District.
 1. The model and analysis framework were developed as a strategic tool to understand potential project opportunities and be able to astutely approach developers and enter into more detailed project development discussions.
 2. It is important to note that this model is not a one-time static look at the potential solar capabilities for the City of Madison – this model develops an analytical framework and toolset to review project opportunities and enter more detailed planning phases.
 3. Any financial results represented in the model are based on high level assumptions from industry data and City of Madison data inputs and cannot be relied upon for investment decisions without additional due diligence on project opportunities.
 - a. The scope of work and related project efforts were designed to create value in having the ability to strategically review opportunities on an ongoing basis.
 - b. The model helps identify the project economic drivers and key assumptions to vet with potential development partners.
 4. All project sites and related assumptions about project structure and ownership for use in the model have been provided by the City.

Tax Disclaimer

Pursuant to the rules of professional conduct set forth in Circular 230, as promulgated by the United States Department of the Treasury, nothing contained in this communication was intended or written to be used by any taxpayer for the purpose of avoiding penalties that may be imposed on the taxpayer by the Internal Revenue Service, and it cannot be used by any taxpayer for such purpose. No one, without our express prior written permission, may use or refer to any tax advice in this communication in promoting, marketing, or recommending a partnership or other entity, investment plan or arrangement to any other party.

2. Summary of Findings and Implementation Recommendations

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Summary of Findings and Implementation Recommendations



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Overall Summary - Base Case Financial Performance

- > The City, County and MMSD identified a total of 49 potential project sites to be considered in the base-case run of Baker Tilly's assessment model
- > Utilizing historical utility meter data and location-specific site assumptions provided by the City relative to project generation potential, an aggregate project designed to meet MG&E's tariff policies appears to be challenged
 - Assuming an expected unlevered Internal Rate of Return hurdle of 8% (based on reasonable expectations of a third party developer) the PV project combined returns fall short of investment expectations
 - This does not mean that PV portfolio will not work for the City, but it does mean that additional analysis is required to develop implementation strategies with higher probability of success

Project Viability Indicators – Base Case	
Net Present Value (\$)	(6,044,943)
Discount rate / Hurdle Rate(%)	8.0%
After Tax IRR with Exit Multiplier (%)	3.21%

- > *Please note as we review returns that there is additional value to the project as a hedge / stabilization mechanism against increasing energy costs from traditional sources*

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Summary of Findings and Implementation Recommendations



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Recommendation Summary

- > Baker Tilly recommends that the following considerations be explored to potentially benefit the planned solar project investment portfolio
 - Additional details for each recommendation have been included in the body of this report
 1. Consider building a smaller / smarter project portfolio focusing on higher performing sites (projected basis)
 2. City to provide O&M services to the projects to enhance economics (selective portfolio)
 3. City to provide favorable financing to developer(s) and review financing alternatives
 4. Engage strategic tax credit investor to monetize all ITC and depreciation benefits upfront at no return (or lower than market return)
 5. Revisit tariff policies with MG&E to optimize project sites through appropriate project sizing / meter aggregation / other strategies
 6. Optimize additional incentives and funding opportunities through creative project structuring

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Summary of Findings and Implementation Recommendations



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Recommendation Summary – Tactical Implementation Steps

- > In line with Baker Tilly's findings, the next logical steps towards implementation have been outlined as follows (high level only):
 1. Perform a more focused review of specific project potential:
 - a. Additional project partner / stakeholder identification
 - b. Review of City goals / objectives for project (financial, environmental, political, other)
 - c. Conduct Request for Information (RFI) process to facilitate more concrete interest and intelligence from the development community
 - d. Firm up financial and operating assumptions
 - e. Additional review / identification of the ideal project sites, including technical review
 - f. Technical review of equipment vendors, construction firms, etc.
 - g. Update project pro forma projections
 2. Work with WI third party ownership group to identify regulatory concerns and potential solutions
 - a. Consider solar leases, PPA alternatives, tariff strategies, etc
 3. Work with the City and MG&E on tariff strategies / negotiation as it pertains to project opportunities
 4. Begin more concrete financial due diligence and planning

3. Load Profile Assessment and Utility Interface

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Load Profile Assessment and Utility Interface



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MG&E Tariff Policies

- > Baker Tilly's project scope was directed by the City to focus project analysis using existing MG&E tariff rates and policies
- > The accounting corresponding to these tariff policies has been coded into Baker Tilly's financial model, which is discussed in greater detail in the subsequent section of this report
- > Much detail of the MGE tariffs and how they impact the structure and economics of a PV investment are included in Baker Tilly's report, but we will spare you the details here
- > It is important to note that MG&E has the ability to negotiate additional tariff treatment for projects, but is not required to do so
- > The good news is that Baker Tilly's model addresses the complexities involved in the tariff accounting...the not so good news is that the tariff policies are not overly favorable to the development of distributed generation projects
 - The tariff is designed to allow for energy offset opportunities, but to not encourage additional production beyond consumption at a specific meter

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Load Profile Assessment and Utility Interface



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Load Data by Project Site

- > The City provided detailed load / usage data for 49 project site locations
 - All project sites for analysis were determined by the City, County and MMSD
 - Please remember that the key to this analysis is that we have created a flexible tool and additional sites can be reviewed on their own or as part of an aggregate portfolio at any time
- > Historical load data was collected by the City and input into Baker Tilly's model as a key input to determine the appropriate project size and project potential by site
- > Although based on historical data in the base case financial model, the model was built with the flexibility to modify load inputs at each site as the user see fits

4. Development of Preliminary Project Pro Forma Financial Model

Madison PV Assessment Model

Development of Preliminary Project

Pro Forma Financial Model



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Overview

- > The Madison Solar Financial model was built for the City of Madison, Dane County, Dane County Airport and Madison Metropolitan Sewerage District (defined as users).
- > The model was developed for the following broad primary purposes, in line with Baker Tilly's scope of work:
 1. The model assesses solar power generation capability and financial viability for up to 55 sites. The model analysis is based on site-specific parameters, including load usage data, physical site characteristics, and actual solar resource potential.
 2. Depending on the site's performance, the users can select "Yes" or "No" on the financial model tab related to the particular site. If "Yes" is selected, which means that the site meets the investment criteria or is selected for other strategic or political reasons, the site will be shown on the Combined Project Returns tab to be evaluated together with other selected sites as one aggregate project. This flexibility in approach was important to project stakeholders to review individual and aggregate project opportunities.

Madison PV Assessment Model

Development of Preliminary Project

Pro Forma Financial Model



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Overview

- > More specifically, the Madison Solar Financial Model is built to help the City of Madison and other stakeholders answer the following questions:
 - What is the potential solar generation on a monthly basis for fixed, single and dual solar technologies based on the available space, azimuth and orientation of each location?
 - What savings can be realized on a power bill or what revenue can be realized from each site, based on the current net metering tariff policies established by MG&E?
 - How is project performance impacted based on different tax benefits for different business / ownership structures?
 - What returns can be realized from the project (on a site by site basis) and how is this return impacted by different exit strategies?

Madison PV Assessment Model

Development of Preliminary Project

Pro Forma Financial Model



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Overview

- > Important points of understanding relating to what the model is and what the model is not...
 1. The model and analysis framework were developed as a strategic tool to understand potential project opportunities and be able to astutely approach developers and enter into more detailed project development discussions.
 2. It is important to note that this model is not a one-time static look at the potential solar capabilities for the City of Madison – this model develops an analytical framework and toolset to review project opportunities and enter more detailed planning phases.
 3. Any financial results represented in the model are based on high level assumptions from industry data and City of Madison data inputs and cannot be relied upon for investment decisions without additional due diligence on project opportunities.

Madison PV Assessment Model

Development of Preliminary Project Pro Forma Financial Model



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Overview

> In addition, the Combined Project Returns tab evaluates all selected sites as a single aggregate project

Roll-up of Site Performance Data

Location	Project Size (kW)	NPV	Individual Project IRR	Project Cost	2012	2013	2014	2015	2016	2017
Site L1 - Metro Maintenance	1,227	(1,108,854)	0.65%	2,353,434	(2,353,434)	118,058	122,975	128,095	133,440	139,017
Site L2 - Monona Terrace East Vault	465	(450,558)	3.19%	1,420,414	(1,420,414)	15,415	13,998	20,598	21,215	21,952
Site L3 - Monona Terrace West Vault	372	(376,295)	1.26%	868,382	(868,382)	12,170	12,535	12,911	13,299	13,698
Site L4 - Obich Parks	256	(366,465)	0.70%	792,572	(792,572)	11,825	12,180	12,546	12,922	13,310
Site L5 - Fire Station #1	102	(84,688)	1.42%	222,390	(222,390)	3,769	3,882	3,998	4,118	4,242
Site L6 - Waste Transfer Station	95	(91,355)	1.22%	209,177	(209,177)	3,611	3,719	3,831	3,946	4,064
Site L7 - Streets West	435	(448,646)	na	853,874	(853,874)	11,301	11,640	11,989	12,349	12,719
Site L8 - Streets East	695	(928,117)	na	1,727,165	(1,727,165)	21,717	22,369	23,040	23,731	24,443
Site L9 - West Side Park Maintenance	423	(23,960)	8.40%	830,632	(830,632)	11,024	11,354	11,695	12,046	12,407
Site L10 - WU Ops Center	117	(120,276)	0.46%	240,583	(240,583)	4,093	4,216	4,342	4,473	4,607
Site L11 - WU Administration Building	292	(511,683)	na	900,458	(900,458)	13,130	13,524	13,929	14,347	14,776
Site L12 - Unit Well 6	21	(67,479)	na	68,810	(68,810)	1,937	1,995	2,055	2,116	2,180
Site L13 - Unit Well 9	214	(316,048)	0.48%	667,806	(667,806)	10,317	10,627	10,946	11,274	11,612
Site L14 - Unit Well 10	127	(332,343)	na	407,295	(407,295)	7,168	7,383	7,605	7,833	8,066
Site L15 - Unit Well 11	115	(242,270)	na	371,479	(371,479)	6,735	6,937	7,145	7,360	7,580
Site L16 - Unit Well 12	305	(540,597)	na	940,559	(940,559)	13,614	14,023	14,444	14,877	15,323
Site L17 - Unit Well 13	119	(247,017)	na	382,595	(382,595)	6,863	7,074	7,297	7,535	7,779
Site L18 - Unit Well 14	108	(240,347)	na	344,864	(344,864)	6,413	6,608	6,804	7,008	7,218
Site L19 - Unit Well 15	44	(133,492)	na	159,813	(159,813)	4,174	4,299	4,428	4,561	4,698
Site L20 - Unit Well 16	105	(227,060)	na	342,147	(342,147)	6,261	6,572	6,769	6,972	7,181
Site L21 - Unit Well 17	80	(124,566)	0.67%	267,718	(267,718)	5,481	5,645	5,815	5,989	6,169
Site L22 - Unit Well 18	120	(249,565)	na	387,523	(387,523)	6,929	7,137	7,351	7,572	7,799
Site L23 - Unit Well 23	130	(242,565)	na	411,410	(411,410)	7,290	7,509	7,734	7,966	8,205
Site L24 - Unit Well 24	417	(334,955)	1.61%	819,395	(819,395)	10,890	11,216	11,553	11,899	12,256
Site L25 - Unit Well 25	159	(263,189)	na	503,798	(503,798)	8,335	8,585	8,842	9,107	9,381
Site L26 - Unit Well 29	232	(434,303)	na	720,148	(720,148)	10,890	11,278	11,677	11,985	12,324
Site L27 - Unit Well 30	95	(154,954)	0.22%	313,510	(313,510)	6,034	6,215	6,402	6,594	6,792
Site L28	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L29	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L30	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L31 - Alliant Energy Center Building	49	(159,735)	na	145,374	(145,374)	6,830	7,035	7,246	7,463	7,687
Site L32 - City County Building	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L33 - Alliant Energy Center Building 9 and 10	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L4 - Administration	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L5 - Barn #10 and 11	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L6 - Barn 4	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L7 - Willow Island	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L8	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L9	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L10	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L11	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site L12	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD1 - Pump Station 1	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD2 - Pump Station 2	3	(46,081)	na	34,268	(34,268)	1,525	1,571	1,618	1,666	1,716
Site MMSD3 - Pump Station 4	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD4 - Pump Station 6	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD5 - Pump Station 7	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD6 - Pump Station 10	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD7 - Pump Station 11	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD8 - Pump Station 12	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD9 - Pump Station 13	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD10 - Pump Station 14	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD11 - Pump Station 16	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
Site MMSD12 - Waste Plant	668	(922,856)	0.73%	1,830,842	(1,830,842)	18,748	19,310	19,889	20,486	21,101
Site MMSD13	-	(33,951)	na	28,405	(28,405)	322	331	341	352	362
TOTAL PROJECT COSTS & ONGOING EBTD	7,791			(19,765,057)	(19,765,057)	384,795	397,695	411,057	424,890	439,211
EBTD values based on EBTD:										
EBTD	-	-	-	-	-	384,795	397,695	411,057	424,890	439,211
Interest Expense	-	-	-	15,000	609,402	615,110	621,633	627,950	634,042	639,942
Depreciation expense only (no ITC)	-	-	-	-	3,282,818	5,260,510	3,155,306	1,163,763	1,893,793	1,893,793
Taxable Income/(loss)	-	-	-	(15,000)	(3,511,434)	(5,477,925)	(3,366,881)	(2,096,843)	(2,088,814)	(2,088,814)
Add: Tax and ITC benefits/(liability), yearly (1)	-	-	-	6,000	7,206,606	2,191,170	1,346,752	838,737	835,446	835,446
Net After Tax Cash Available (with interest only payments)	-	-	-	(9,000)	6,982,991	1,973,755	1,136,177	635,677	640,615	640,615
After Tax EBTD Income:	(9,000)	6,982,991	1,973,755	1,136,177	635,677	640,615				
After Tax IRR with Exit Value:				(19,774,057)	6,982,991	1,973,755	1,136,177	635,677	640,615	

Aggregate Performance Data

Financial Inputs	Amount
Interest rate (%)	3%
Beginning Revolver Balance:	\$ 500,000
Business entity	LLC
Effective tax rate	40.00%

Uses of Funds (2012 dollars)			
Total lifetime project costs	19,765,057		
Exit Value Project Life			
Current year	Project ends	Project total Life	Investment Life
2012	2052	40	20
Exit year			2032
Exit year multiplier	2.5		

Project Viability Indicators	
Net Present Value (\$)	(13,804,692)
Discount rate (%)	8.0%
Unlevered IRR (%)	n/a
Unlevered IRR with Exit Multiplier (%)	n/a
Entity Levered IRR (%)	n/a
Entity After Tax Levered IRR with Exit Multiplier (%)	#NUM!

Madison PV Assessment Model

Development of Preliminary Project

Pro Forma Financial Model



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“Power Generation” Tab

- > Data entry for the power generation tabs can be divided into three steps
 - These steps need to be addressed independently for each prospective project site
 - Very detailed modeling instructions were provided to the City related to use of this tool

Step 1- Select generating equipment for the analysis

Step 2 - Identify applicable solar technologies and estimate available space for solar development

Step 3 - Enter monthly percentages for on-peak and off-peak power and current utility tariff prices

Madison PV Assessment Model Development of Preliminary Project Pro Forma Financial Model



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“Financial Model” Tab

- > Data entry for the financial model tabs can be divided into four major steps (with many additional sub-steps)
 - These steps need to be addressed independently for each prospective project site
 - Again, detailed modeling instructions and methodologies were provided to the City

Step 1- Identify capital and operating cost estimates

Step 2 – Identify sources of funds

Step 3 – Identify timeframe of the project

Step 4 – Identify and review additional financial inputs

Madison PV Assessment Model Development of Preliminary Project Pro Forma Financial Model



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...okay, what does this all mean? How can the City of Madison and other stakeholders use this model?

- > All financial assumptions included in the model will need additional vetting as project opportunities arise and become more real with developers.
- > However, the mechanics of the model have been designed to clearly demonstrate individual site viability as well as overall project success through key financial performance metrics.
- > As assumptions are confirmed, tariff policies reviewed, and project structures are considered, the financial analysis tools developed in the model will provide an efficient basis for additional outreach with project developers.

Madison PV Assessment Model

Development of Preliminary Project Pro Forma Financial Model



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Base Case Financial Performance

- > The City, County and MMSD identified a total of 49 potential project sites to be considered in the base-case run of Baker Tilly's assessment model
- > Utilizing historical utility meter data and location-specific site assumptions provided by the City relative to project generation potential, an aggregate project designed to meet MG&E's tariff policies appears to be challenged
 - Assuming an expected unlevered Internal Rate of Return hurdle of 8% (based on reasonable expectations of a third party developer) the PV project combined returns fall short of investment expectations
 - This does not mean that PV portfolio will not work for the City, but it does mean that additional analysis is required to develop implementation strategies with higher probability of success

Project Viability Indicators – Base Case	
Net Present Value (\$)	(6,044,943)
Discount rate / Hurdle Rate(%)	8.0%
After Tax IRR with Exit Multiplier (%)	3.21%

- > Additional considerations for implementation will be discussed that may improve project economics
- > *Please note as we review returns that there is additional value to the project as a hedge / stabilization mechanism against increasing energy costs from traditional sources*

Madison PV Assessment Model

Development of Preliminary Project

Pro Forma Financial Model



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Sensitivity Analysis of Financial Performance – Single Site Example

- > Unfortunately, at this large City site, the sensitivity analysis indicates that even substantial increases in the project revenues / savings through an increased balanced electricity rate and significant decreases in the project's capital costs would likely not derivate to a successful project (positive NPV / IRR over the hurdle rate of 8%)
 - In this view, favorable economics are not realized until power rates are **inflated** by 30-50% AND capital expenditures are **reduced** by 10-25% from Base Case assumptions, with an assumed LLC entity structure

		Balanced Electricity Rate							
		-10%	Base	+10%	+20%	+30%	+40%	+50%	
		\$ 0.0683	\$ 0.0759	\$ 0.0835	\$ 0.0910	\$ 0.0986	\$ 0.1062	\$ 0.1138	
CapEx	+25%	\$ 4,202,014	1.65%	2.61%	3.49%	4.24%	4.73%	5.18%	5.77%
	+20%	\$ 4,033,933	1.95%	2.92%	3.80%	4.51%	5.01%	5.48%	5.94%
	+15%	\$ 3,865,853	2.26%	3.24%	4.12%	4.66%	5.17%	5.81%	6.27%
	+10%	\$ 3,697,772	2.59%	3.59%	4.41%	4.97%	5.49%	6.00%	6.48%
	+5%	\$ 3,529,692	2.95%	3.95%	4.58%	5.15%	5.85%	6.37%	6.86%
	Base	\$ 3,361,611	3.32%	4.28%	4.91%	5.51%	6.08%	6.61%	7.28%
	-5%	\$ 3,193,531	3.72%	4.62%	5.13%	5.75%	6.49%	7.04%	7.56%
	-10%	\$ 3,025,450	4.12%	4.85%	5.52%	6.17%	6.78%	7.34%	8.04%
	-15%	\$ 2,857,369	4.49%	5.10%	5.81%	6.48%	7.26%	7.84%	8.38%
	-20%	\$ 2,689,289	4.76%	5.54%	6.29%	6.98%	7.62%	8.40%	8.95%
-25%	\$ 2,521,208	5.21%	5.89%	6.66%	7.37%	8.20%	8.82%	9.38%	

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Development of Preliminary Project

Pro Forma Financial Model



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Sensitivity Analysis of Financial Performance

- > It is important to note that this one-time look is not an indicator of actual financial performance or actual probability of success.
- > Additional due diligence, vetting of project assumptions, and other strategic planning that is natural for the next phase of project work could very well lead to more favorable (and certainly more knowable / better understood) project economics.
- > The important thing to note at this juncture is that the users of the model have the full capability to run various scenarios to help determine what does make sense and how to address risks associated key financial variables.

5. Market Outreach and Potential

Overview of Developer Outreach

- > Baker Tilly's outreach to potential developers for the City's project led to the following summary-level findings:
 - There is at least some interest in the project by the development community, but a common theme was that much work needed to be done exploring technical feasibility for these sites
 - Concerns were raised on the net metering policies and limitation of project generation capabilities, along with 3rd party ownership restrictions
 - The general indication was also that a higher power rate would be required than the City's blended cost for avoided power and onsite generation as modeled by Baker Tilly
- > At this early stage, non of these findings should be interpreted too negatively by the City; additional steps for working with the development community have been included in the recommendations of this report.

Developer A:

- > Developer A would be extremely interested in performing the due diligence to develop such a project. In fact, they are currently constructing a similar project for a municipality who is taking a similar approach.
- > Developer A stated when municipalities are on the PPA provider side, financing institutions are extremely comfortable with beneficial terms. A municipal with even moderate credit is easier to finance a solar deal with than a private entity with great credit.
- > Developer A continued to state that they deal with a team (installers, etc) who handles projects < 1MW, a team who handles projects 1-10MW and another team for larger projects. They stated they specialize in projects such as these where individual sites are aggregated. It will come down to project financials, but they would be interested in next steps.

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Market Outreach and Potential



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Developer D:

- > Baker Tilly met with a team from Developer D on the project potential.
- > Developer D is definitely interested in the project potential and indicated their may be opportunity to optimize the system production capacity at a few large green space locations and then run lines to the individual metering locations with significant load requirements.
- > Developer D's approach would need more detailed review pertaining to tariff and interconnect policies for project size as it would likely not meet MG&E's requirements.

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Market Outreach and Potential



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Developer E:

- > Baker Tilly had a brief discussion around the project potential with Developer E.
- > Developer E was quick to point out concerns with the project location pertaining to solar potential as well as the proposed net metering structure with the utility.
- > Developer E also estimated that the price would have to be \$0.17/kWh to make it viable.
 - Note: The blended rate of power based on project savings and revenue under the MG&E tariff varies by project site, but is closer to \$0.10/kWh (not including the potential for REC revenue).



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Wisconsin must adopt a policy expressly allowing customers to enter into contracts with third parties to install and own a renewable energy system at the customer's premises.

- > Current ambiguities in public utility law interfere with customers' ability to access clean energy produced on their premises. This policy affirms their right to decide how they wish to purchase or implement a renewable energy system for their site.
- > Because the third-party owner provides the up-front capital under this arrangement, this policy will greatly expand the number of energy users who can afford to host wind, solar or biogas systems serving their homes or businesses. Thus, third-party ownership models leverage customer-supplied capital more effectively than other incentive-based approaches.
- > In contrast to standard utility electric service, purchasing energy directly from a renewable energy system enables households and businesses to lock in predetermined prices for 10 years or longer.

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- > In contrast to renewable energy purchased from utilities through their green power programs, the price of energy from a third-party owned renewable energy system does not increase or decrease as a result due of short-term fluctuations in the cost of conventional energy.
- > This policy will enable nonprofit entities to team up with for-profit companies that can take full advantage of federal tax incentives, such as the 30% Investment Tax Credit and accelerated depreciation.
- > Energy from a third-party owned system either flows to the customer directly, offsetting consumption, or is sold to the utility under an approved tariff. The rate impact from these installations would be negligible.

Additional Development Considerations

- > **1. Build a smaller project portfolio focusing on higher performing sites**
 - If Baker Tilly creates a smaller portfolio of projects with higher individual performance, the project performance is improved slightly by not burdening the portfolio with the lowest performers.
 - Please note: Baker Tilly is **NOT** indicating that these are the best or most appropriate sites for development, but rather based on the assumptions provided by the City, they perform better in the assessment model.
 - If the portfolio is reduced to only include those sites with an IRR of over 4% (still not high performing), the economics are improved as follows (17 out of the 49 sites):

Project Viability Indicators – Selective Portfolio

Net Present Value (\$)	(3,240,772)
Discount rate / Hurdle Rate(%)	8.0%
After Tax IRR with Exit Multiplier (%)	3.90%

Additional Development Considerations

> 2. City to provide O&M services to the projects (selective portfolio)

- The City could decide to provide O&M services to the project to reduce outsourced O&M costs on an annual basis
- Assuming approximately \$1,500 of O&M reductions each year per site, the economics of the selective portfolio of 17 sites are improved again, but only marginally

Project Viability Indicators – Selective Portfolio / City O&M

Net Present Value (\$)	(2,591,309)
Discount rate / Hurdle Rate(%)	8.0%
After Tax IRR with Exit Multiplier (%)	4.63%

Additional Development Considerations

> 3. City to provide favorable financing to developer

- Assuming the City decided to provide favorable financing to a developer, the project could make a lot more sense to that developer
- Here is an example of a levered return, assuming 35% debt provided by the City at 4%

Project Viability Indicators – Selective Portfolio / City Financing	
Net Present Value (\$)	\$3,212,508
Discount rate / Hurdle Rate(%)	8.0%
After Tax IRR with Exit Multiplier (%)*	14.65%

- Under the assumed operating conditions and financial assumptions, the project is able to service its debt to the City with ease, with a minimum Debt Service Coverage Ratio in Year 1 at 1.28x and an average of 1.98x over the 20 year duration of the loan.
- **It is important to note that a levered IRR that includes project debt is not compared on par with an unlevered IRR as we have modeled in the preceding slides. Included for illustration purposes only.*

Additional Development Considerations

- > **5. Revisit Tariff Policies with MG&E to Optimize Project Sites through Appropriate Project Sizing / Meter Aggregation / Other Strategies**
 - With the current tariff policies there is a disconnect at certain sites between potential for solar generation and projected performance as some of the most ideal sites for generation purposes are not located with heavy load demands
 - Additionally, some sites may find it advantageous to develop projects larger than 100 kW, which would not currently be allowable by MG&E
 - It is important to note that MG&E has the ability to negotiate additional tariff treatment for projects, but is not required to do so
 - The tariff is designed to allow for energy offset opportunities, but to not encourage additional production beyond consumption at a specific meter
 - Although MG&E's net metering policies are understood and rational from a system impact perspective, there may be room to negotiate as part of a partnership with the City of Madison

Additional Development Considerations

> 5. Revisit Tariff Policies with MG&E to Optimize Project Sites through Appropriate Project Sizing / Meter Aggregation / Other Strategies

- E.g. City Site L-7 Streets West
- Currently production at this site is limited to follow annual load requirements at the site more closely, thereby only utilizing 39% of the project's generation potential
- Assuming the project site could be aggregated with another City site with usage to offset, the generation potential and revenue could be enhanced (utilizing the original blended power rate determined for the site in the assessment model as opposed to strictly PG-1 for over producing)

Load Required Yearly Generation						
Load (kWh/year)	Percent of available space to meet load	Space to meet load (ft ²)	Number of panels	System size (kW)	Generation per technology (kWh/year)	Total site generation (kWh/year)
238,517	39%	12,792	723	170	235,723	235,723
	0%	0	0	0	0	
	0%	0	0	0	0	

Load Required Yearly Generation						
Load (kWh/year)	Percent of available space to meet load	Space to meet load (ft ²)	Number of panels	System size (kW)	Generation per technology (kWh/year)	Total site generation (kWh/year)
238,517	100%	32,800	1853	435	604,417	604,417
	0%	0	0	0	0	
	0%	0	0	0	0	

Project Viability Indicators – 1 Site – City L-7	Current	Potential
Annual Production (kWh)	235,723	604,417
Annual Revenue – Year 1 w/ REC	\$24,507	\$62,648
After Tax IRR with Exit Multiplier (%)	5.06%	5.49%

Additional Development Considerations

> **6. Optimize additional incentives and funding opportunities**

- Additional Incentives and Funding Opportunities will be hashed out relative to future project phases when a clearer picture of project ownership and strategies are determined.
- Project financing, ownership and structuring will all need further consideration to optimize opportunities.

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Thank you



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Thank you for the opportunity to serve your team. We appreciate the commendable cooperation, flexibility and willingness to participate in this project from City of Madison, Dane County, Dane County Municipal Airport and Madison Metropolitan Sewer District staff, MG&E subject matter experts, project developers spoken with and other project stakeholders.

Please let us know if you have any questions, comments or concerns.