SOLAR PHOTOVOLTAIC (PV) DEVELOPMENT ROADMAP TEMPLATE

OVERVIEW

The PV Development Roadmap serves as the guiding framework for solar photovoltaic (PV) development for Wisconsin K-12 public schools. This framework is intended to be utilized by schools that have an interest in a solar PV system but are *still in need of supportive leadership*. It is intended to function, in part, as a persuasive document by communicating to relevant stakeholders and decision makers the benefits and feasibility of procuring a solar PV system. It will help guide the development process by helping to identify and avoid major roadblocks. It is intended to be completed in tandem with the *PV Development for WI K-12 Schools* course and is best completed by a solar champion team including school administrators, staff, teachers, school board members, student groups, etc.

The Roadmap is designed to:

1. Aggregate all necessary information for the development of a solar PV project, with the intent of eventually going to procurement
2. Engage key project partners in defining a shared vision for PV development and investment
3. Communicate PV project development information to the decision-makers

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THE ROADMAP SHOULD INCLUDE THE FOLLOWING:

School PV Development Team

Describe the team of executive leadership, school board members, faculty, staff, students, and other stakeholders that will lead the development of the Roadmap. Ideally, this should include:

- Identification of PV development team
- Description of your school's PV development team, including roles and responsibilities of team members who will need to perform the following:
    - Roadmap Development and Presentation: Convening team meetings, record-keeping, report development, and presentation to key stakeholders.
    - Stakeholder mapping and Interviews: Identify influencers and decision-makers and interview/survey as appropriate
    - Policies and procedures: Identify available incentives, potential risks, and rules applicable to PV projects on your school.
    - Site Selection: Identify and prioritize sites for potential PV installations and identify maximum potential system sizes
    - Energy Analysis: Utilize utility bills and energy use monitoring data (as available) to determine monthly energy use, rates, and metering arrangements
    - Financial Analysis: Use site and energy use data to estimate optimal system size, system production, energy savings, and available incentives to model financial performance
    - Financing Options: Identify available and feasible financing options for your project
    - Non-financial Benefits: Define opportunities for student learning and public engagement and estimate environmental benefits of PV system production
- Description of business relationships between your school, utilities, solar development companies, project investors and other stakeholders
- Description of student engagement, retention strategy, and any benefits provided to students or other stakeholders for their participation
- Identification of professional development needs of team members and strategies to improve campus capacity for PV development and investment

RESOURCES TO UTILIZE:

- Course presentations & associated materials

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Decision-Making Process and Key Stakeholders:
Describe the process for decision-making to receive the appropriate support and approvals needed to advance PV projects. Who are the key parties necessary for the project to come to fruition? Ideally, this should include:

- Identification of key positions, committees, and individual contacts
- Identification of key concerns of priority decision makers
- Identification primary responsibilities of priority decision makers
- Description of relationships of all relevant parties, including hierarchies, committee compositions, and influential players
- Definition and timelines of meeting calendars, decision cycles, and agenda management for all relevant parties

RESOURCES TO UTILIZE:

- Organization chart, stakeholder & relationship map (created by the team)
- Course presentations & associated materials

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Costs and Risk: Approvals and Legal/Regulatory Considerations

Identify the rules, regulations, procedures, and other risk factors that influence and/or limit the design, siting, and financing of a PV project on school grounds and associated prosperities. Ideally, this should include:

- General utility interconnection requirements, timelines, and/or fees
- Permitting and inspection requirements and fees
- Planning and zoning restrictions
- State policies and incentives
- Utility tariffs and incentive programs
- School and/or district rules and procedures.
- Equipment warranties, operation and maintenance considerations, and safety requirements
- Related liens, restrictions, and agreements affecting property use
- Structural, mechanical, and environmental characteristics that increase cost or risk of the project
- Draft policy recommendations for school projects, including contractor selection, monitoring, O&M, US-made products, etc.

RESOURCES TO UTILIZE:

- Utility interconnection application and process forms
- City and/or County jurisdictional zoning and permitting forms and requirements
- Federal, state and/or local government incentives and laws for solar
- Utility rate tariff and incentive options
- School architecture and facility operating standards and requirements
- Course presentations and associated materials

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Project Financial Goals and School Investment Opportunities

Define the possible financial structures and model financial performance for the proposed PV projects, including potential models of direct school investment. Ideally, this should include:

- Detailed description of proposed financial models, including legal, tax, and liability considerations
- Financial analysis of project benefits for each model
- Description of budget, priorities, and process for school capital investments
- Description of potential PV project investment scenarios
- Funding sources (potential, confirmed, and/or preliminary)

RESOURCES TO UTILIZE:

- Your school/district's finance model for investment decisions
- MREA Solar Finance Simulator at www.solarprojectbuilder.org
- MREA's Solar on Schools grant
- Course presentations and associated materials

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Descriptions of Priority PV Development Sites

Identify and describe the priority sites for PV deployment on school grounds and association properties. Ideally, this should include:

- General site description with aerial and street view maps as appropriate
- Description of current site use and development plans with copies of related documents including legal description, liens, and development plans.
- Description of relevant electrical infrastructure with specific details on suitable points of interconnection and location of substations.
- Analysis of electricity rates (and usage as appropriate) associated with proposed points of interconnection
- General system size estimate, including a general graphical representation of proposed system configuration(s)
- Estimation of system production
- General considerations for system electrical and mechanical integration.
- Description of non-financial benefits of systems, including (as appropriate) aesthetic, shading, research, carbon reduction, etc.
- General system cost estimate

RESOURCES TO UTILIZE:

- Site evaluation form
- School master plans
- School map(s)
- Copies of target land and/or building lease or ownership contracts
- Copies of electrical and structural drawings for target facilities
- Utility rate tariff and incentive options
- Solar production models by NREL PV Watts (free online), PV Syst software, or other
- Energy Periscope Software (free trial accounts for each team from MREA)
- AutoCAD or Google Sketch Up software for design layouts
- Course presentations & associated materials

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Project Executive Summary and Timeline

Develop a draft project summary that succinctly outlines a process for campus PV deployment and investment. Ideally, this should include:

- Introduction and overview of project
- Project goals and leadership
- Description of project benefits and risks
- Key considerations for maximizing project benefits
- Recommendations for priority development sites
- Recommendations for project financial structure
- Timeline and benchmarks for project implementation

RESOURCES TO UTILIZE:

- Course presentations & associated materials

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Supporting Content

In addition to the primary document, the Solar Photovoltaic (PV) Development Roadmap will include the following supplemental elements:

- A persuasive project narrative including an Executive Summary (1-2 pages) in a .doc file
- A project overview slide deck presentation in .ppt or similar file
- An Appendix including all necessary supportive documentation

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