

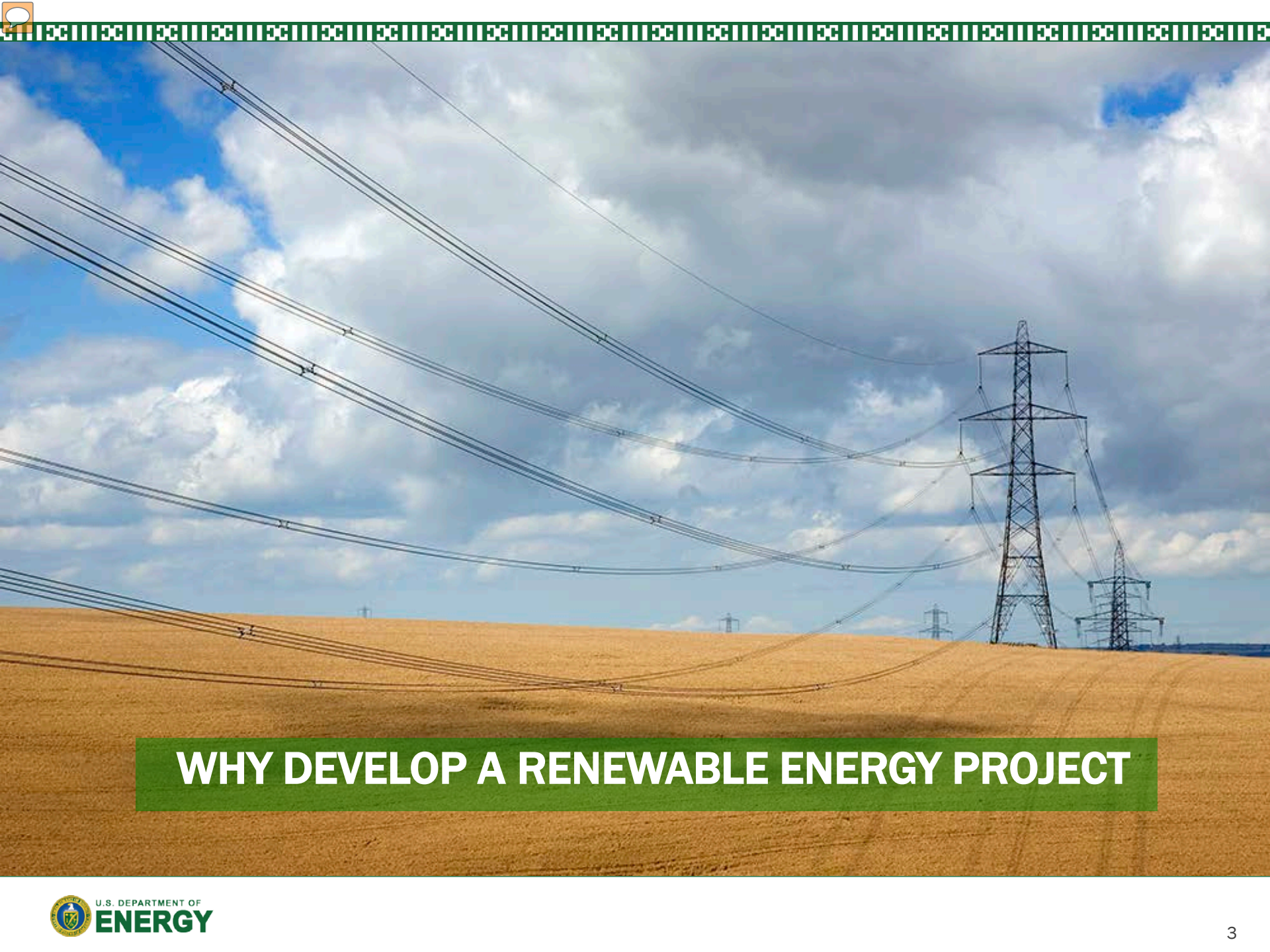
Introduction to Developing and Financing Renewable Energy Projects on Tribal Lands



U.S. DEPARTMENT OF
ENERGY

Agenda

- Motivation: Why develop a renewable energy project
- The project team and roles of the tribe
- A 5 step process for developing a renewable energy project



WHY DEVELOP A RENEWABLE ENERGY PROJECT



Why Complete a Renewable Energy Project?

Economic

- Jobs
- Income
- Cost Savings
- Cost Stabilization
- Tax Revenue
- Industry Exposure

Social

- Energy Reliability (Diversification)
- Energy Independence
- Quality of Life
- Community and Stakeholder Participation

Environment

- Climate Change
 - Mitigation
 - Adaptation
 - Resiliency

Benefits vary based on the type and scale of projects



Why Complete a Renewable Energy Project? *Cont.*

- Considering long-term costs of finite resources will more than likely continue to increase, the opportunity to reinvest cost savings locally can be realized.
- Reinvestments could include:
 1. Increased school lunches
 2. Libraries can stay open
 3. Housing support
 4. Any other asset in need of investment



Determining Project Scale: What is the Goal?



Goal Examples:

- Offset costs
- Become energy self-sufficient
- Generate revenue

Facility

- Savings opportunity
- Self-power opportunity
- Utility interconnection
- 1 month to a year to develop

Community

- Savings opportunity
- Self-power opportunity
- Utility interconnection
- 6 months to 2 years to develop

Commercial

- Competing power price
- Off-taker options
- Transmission options
- 3 to 5 years to develop



Terminology: Project Scale

Facility

Definition: single building system

Primary purpose: offset building energy use



Community

Definition: multiple buildings, campus

Primary purpose: offset community energy costs, energy self-sufficiency



Commercial

Definition: stand-alone project

Primary purpose: *sale of power generation, financial benefits*

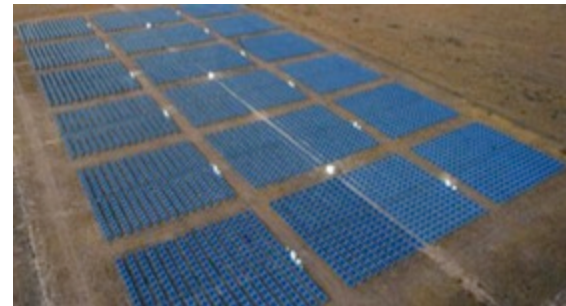


Photo credits: (top to bottom):
NC Solar Center, NREL 09373; Orange County Convention Center, NREL 18077; Tucson Electric Power, NREL 13327



Why Elect to Do a Facility-Scale Project?

- Available, Tribe-controlled, *appropriate* location and ownership options
- Lower capital investment/lower overall risk (than a larger-scale facility)
- Gain experience with renewables before doing a larger-scale project
- Increase self-sufficiency, offset utility electricity costs
- Provide cost certainty
- Provide visual impact and green image
- Reduce environmental impact
- Diversify energy supply with local, renewable sources



Photo by Joe Ryan, NREL 19717

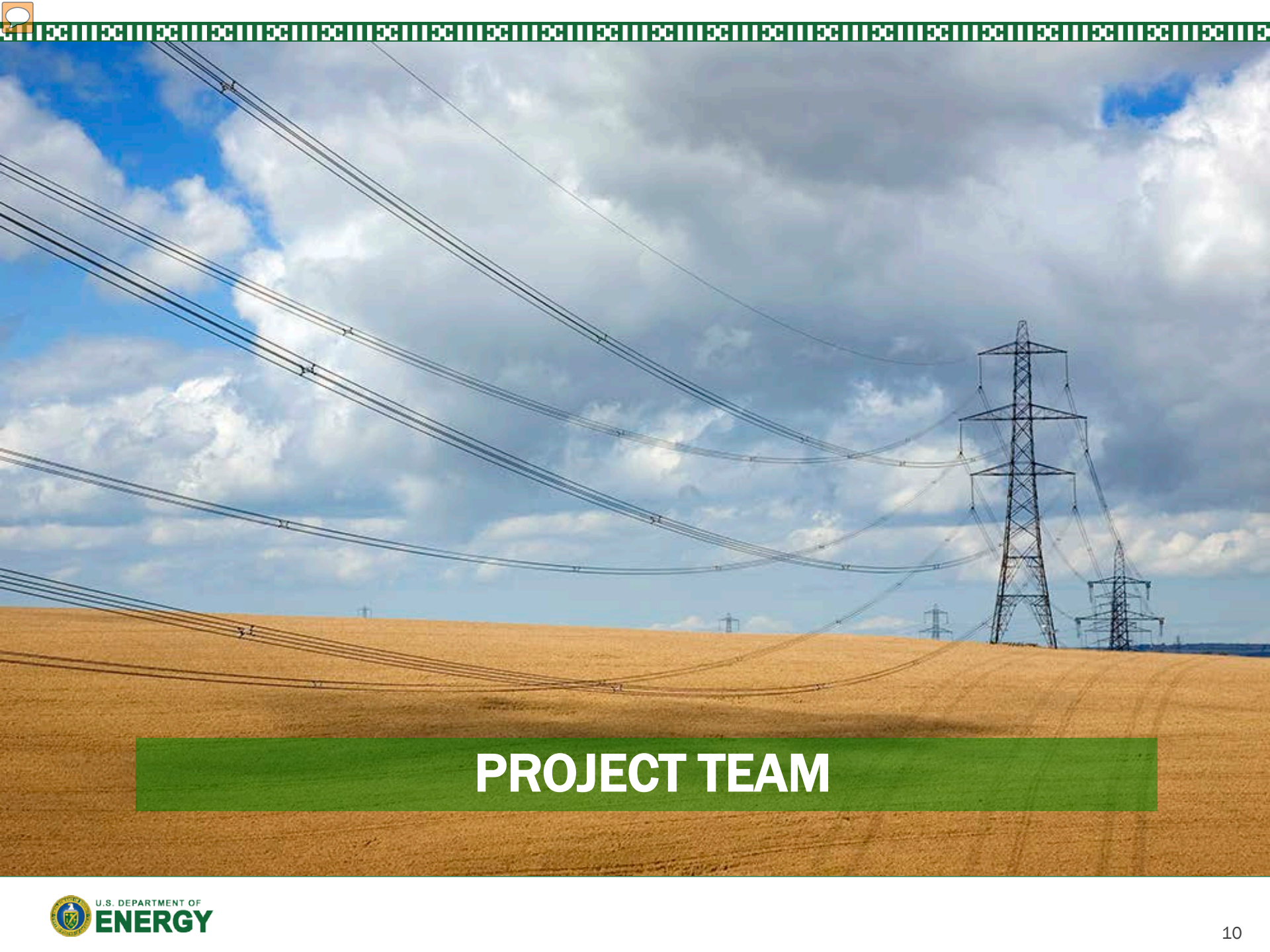


Why Elect to Do a Community-Scale Project?

- Available, Tribe-controlled, *appropriate* location and ownership
- Greater scale increases impact on community (good or bad)
- Offset electricity costs for community (primary use is on-site)
- Minimize environmental impact
- Diversify energy supply with local, renewable sources
- Reduce energy off-taker complexities
- Smaller capital requirements
- Job development (construction and maintenance)
- Self-sufficiency, pride



Photo from Native Energy, Inc., NREL 17589



PROJECT TEAM



Developer Coordinates the Project Team





Project Roles and Definitions

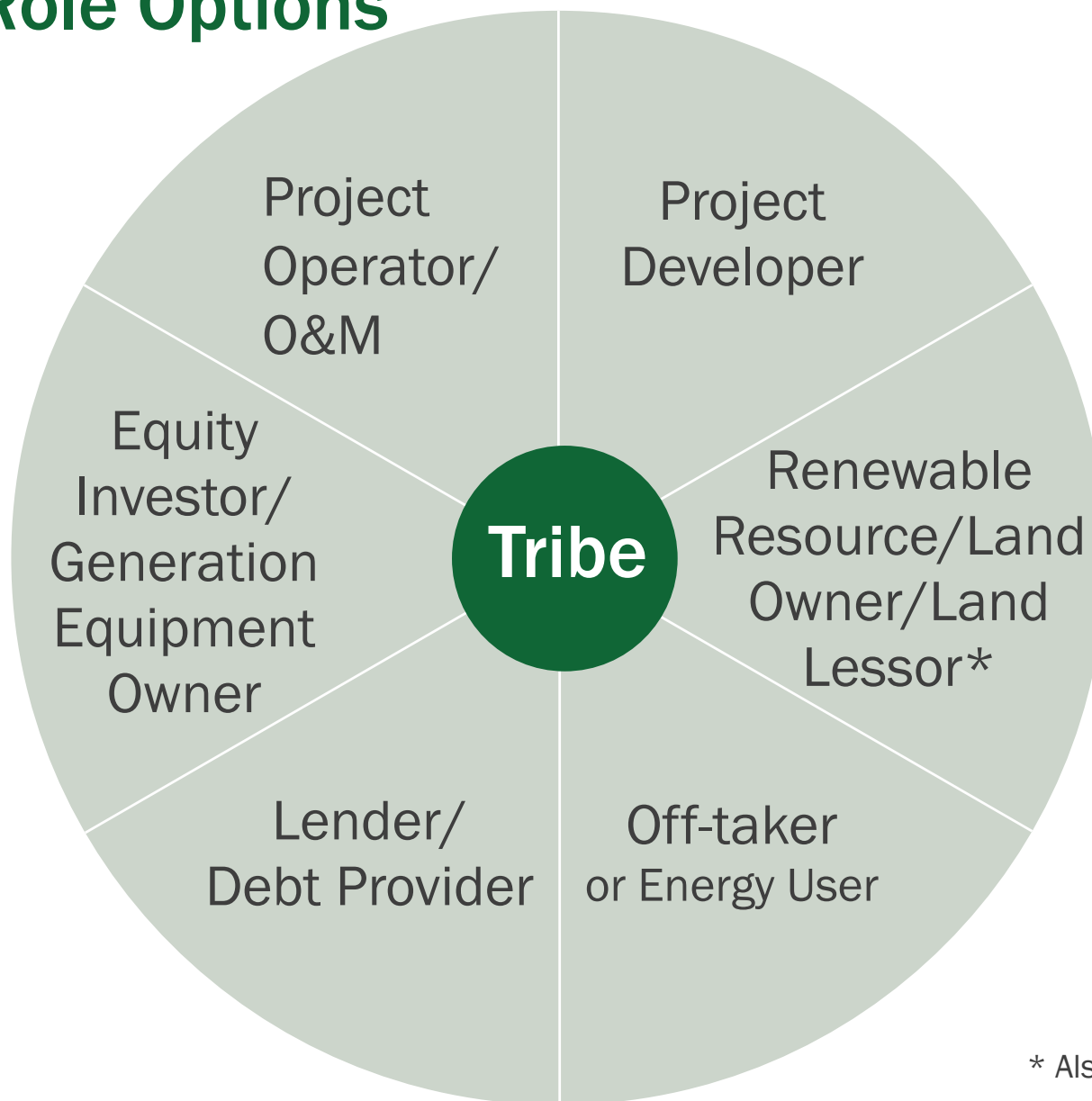
Title	Role
Project Company	Legal entity that owns the project, also called special purpose entity
Resource/Land Owner	Legal and/or beneficial owner of land and natural resources
Sponsor/Developer	Organizes all of the other parties and typically controls project development and makes an equity investment in the company or other entity that owns the project
EPC Contractor	Construction contractor provides design, engineering, and construction of the project
Operator	Provides the day-to-day O&M of the project
Feedstock Supplier	Provides the supply of feedstock (i.e., energy, raw materials) to the project (e.g., for a power plant, the feedstock supplier will supply fuel)
Project Off-taker/ Energy User	Generally enters into a long-term agreement with the project company for the purchase of all the energy
Lender	A single financial institution or a group of financial institutions that provides a loan to the project company to develop and construct the project and that takes a security interest in all of the project assets
Tribal Host	Primary sovereign of project site



ROLES OF THE TRIBE



Tribal Role Options

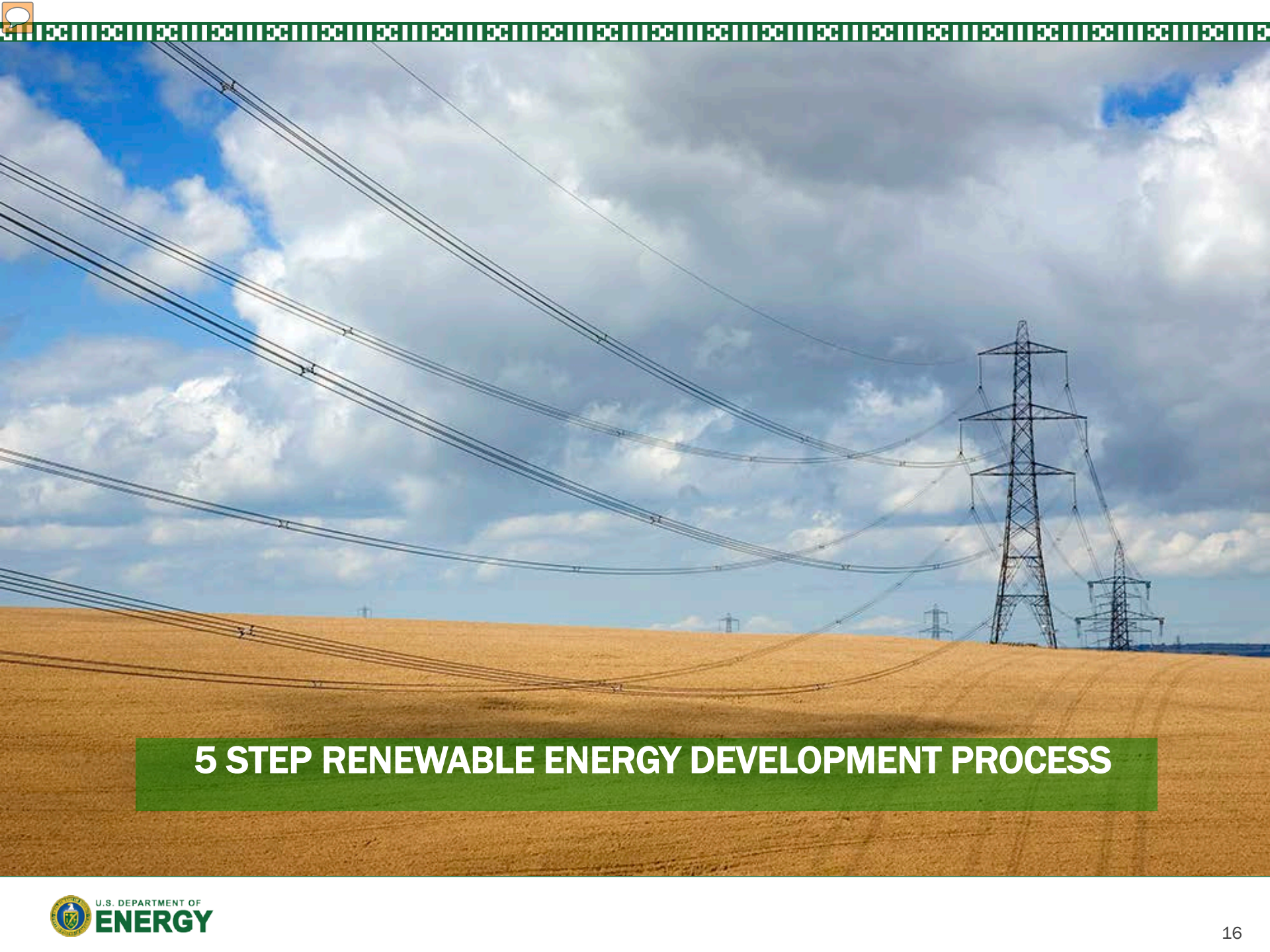


* Also called Tribal Host



Tribal Role Options – Descriptions

Role	Opportunity	Constraints	Comments
Resource/ Land Owner	Land rent/royalty, taxes. Low risk, known reward, consistent income.	<ul style="list-style-type: none"> Limited project control. Must provide site access. 	Limited upside potential, limited risk
Off-taker/ Energy User	Tribe purchases or uses all power on-site. Could include an “on-site” provider; security.	<ul style="list-style-type: none"> Limited investment, economic development for on-site projects 	Must have demand to use power; still requires utility interconnection agreement (if on the grid). Med. risk.
Project Operator/ O&M	Control and self-determination of project; potential for profits (and losses) is minimal	<ul style="list-style-type: none"> Investors require experience Only consider as a new business (multiple projects in a portfolio) Tribes investing money may not want this high risk/return investment 	<ul style="list-style-type: none"> High risk, complex Tribes may be best served by outsourcing A project pipeline/portfolio mitigates some risks
Lender/ Debt Provider	Participate financially in project (e.g., cash or New Market Tax Credit (NMTC)) with lower risk	<ul style="list-style-type: none"> Requires ready capital May be cost-prohibitive to document and manage a single debt transaction (multiple more cost-effective) 	<ul style="list-style-type: none"> Med. risk, more complex Requires lending knowledge Option for Tribes with limited lands, lots of \$
Equity Investor/ Gen. Owner	Provide cash or NMTC for project development. Less capital than commercial-scale.	<ul style="list-style-type: none"> Higher risk than debt lending. Requires ready capital, or unique source of capital that provides market advantage (like NMTC). 	<ul style="list-style-type: none"> High risk, more complex Competes with other investments Option for Tribes with limited lands, lots of \$
Project Developer	Self-determination of project; potential for profits (and losses) is highest. Tribes with \$ don’t need investors.	<ul style="list-style-type: none"> Investors require experience Only consider as a new business (do multiple projects for diverse portfolio) Tribes investing money may not want this high risk/return investment 	<ul style="list-style-type: none"> High risk, complex Tribes may be best served by outsourcing A project pipeline/portfolio mitigates some risks



5 STEP RENEWABLE ENERGY DEVELOPMENT PROCESS



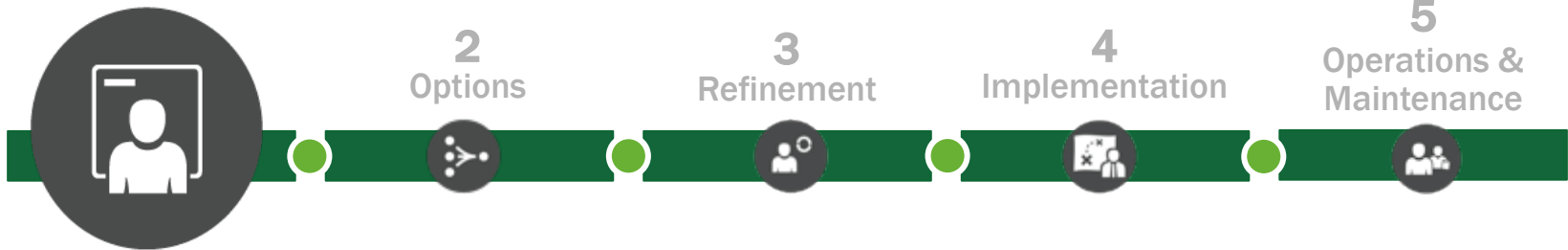
Project Development Process: What Is It?

- Framework based on **experience**
- Focuses on key **decision points**
- Shows that project development is **iterative**
- Emphasizes that delaying or deciding against a project that does not meet current **goals** is a viable outcome and option





1 Potential





Step 1: Site, Scale, Resource, and Community Market Potential



Purpose: Determine whether basic elements for a successful project are in place

Tasks:

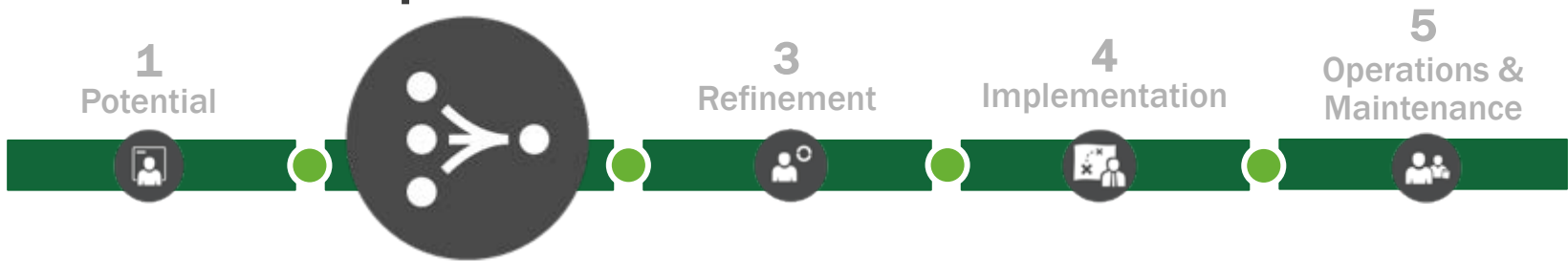
1. Identify possible **sites** for project locations
2. Determine the **energy load/demand** for these sites using past electric bills for these facilities
3. Confirm renewable energy **resource**
4. Review Tribal facility electric cost data, regulations, and transmission and interconnection requirements
5. Evaluate community market potential for renewable sales. **Your community is the marketplace/energy –user.**
6. Assemble or communicate with the right team, those in positions or with knowledge to facilitate, approve, and champion the project

➔ Analyze risks: financing, permitting, construction costs

➔ Analyze utility rules: interconnection and transmission



2 Options





Step 2: Project Ownership and Local Regulatory Options



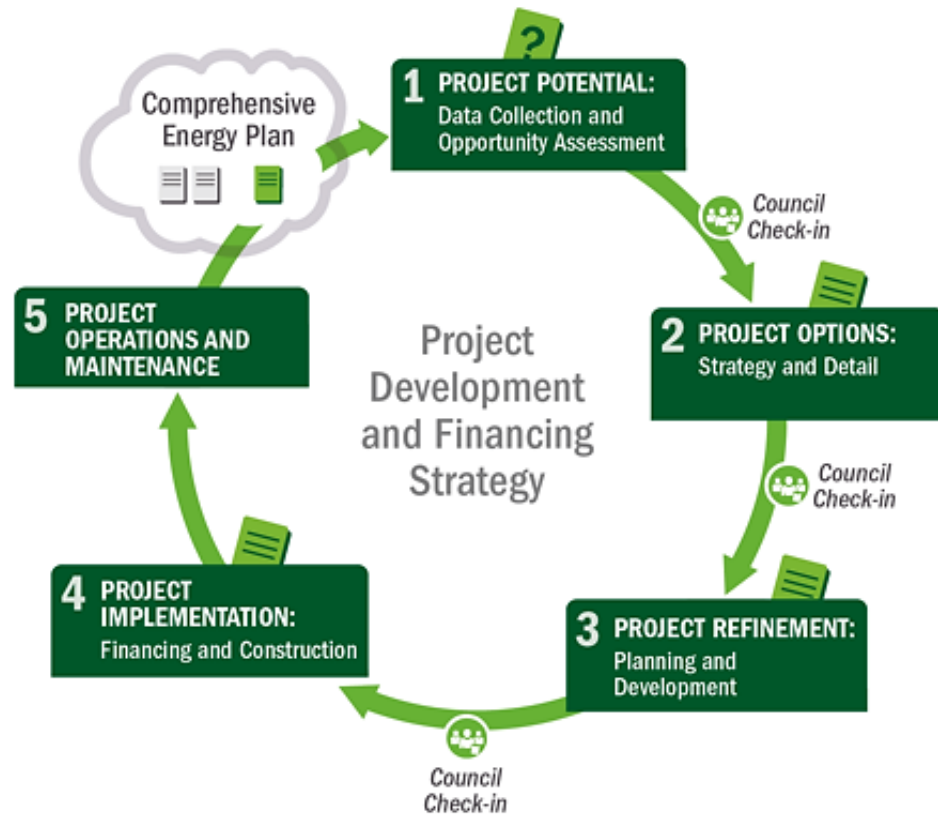
Purpose: (*Assumption: community-scale project on tribal land*) Determine ownership structure and permitting considerations if any. (*Note: It is likely that internal tribal permitting is required if developed on Tribal lands, however, state and federal permitting may be required if the Tribe is dealing with fee or trust land outside the Tribal land holdings.*)

Tasks:

1. Identify final resource and project location
2. Understand ownership structure/Tribal role and risk allocations
3. Narrow financing options and clarify tax-equity structure
4. Initiate engineering, procurement, and construction (EPC) process
5. Understand and plan for permitting, interconnection, and transmitting power to residents within the community

Resources:

DOE Office of Indian Energy renewable energy technology-specific webinars:
<http://www.energy.gov/indianenergy/resources/education-and-training>

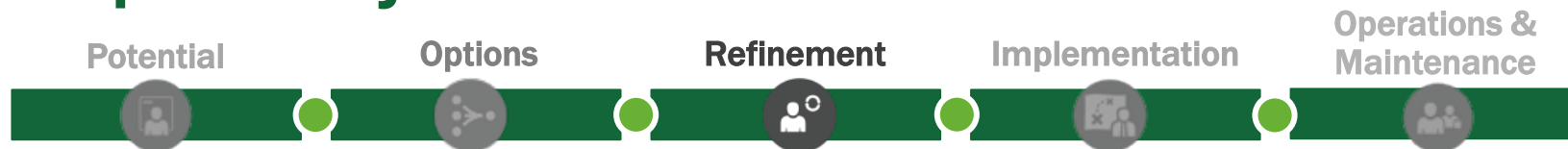


3 Refinement





Step 3: Project Refinement



Purpose: Validate decisions and finalize project structure

Tasks:

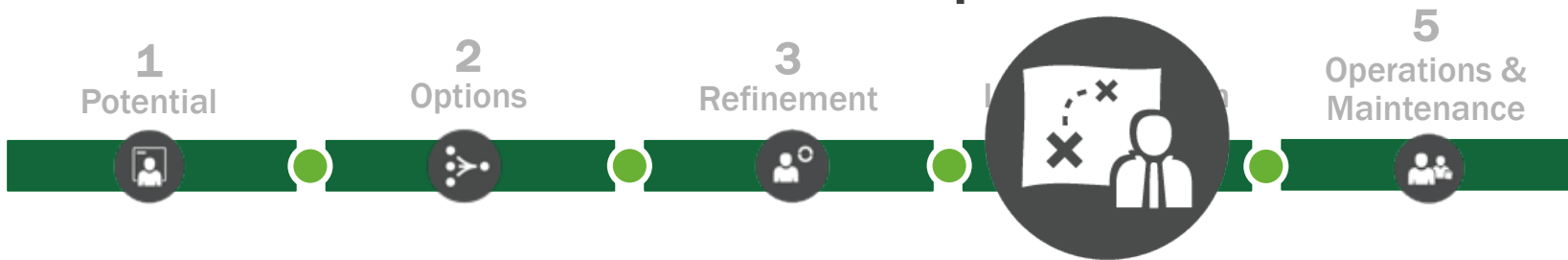
1. Finalize ownership structure and project team identification
2. Finalize permitting including environmental reviews, net metering, and interconnection
3. Finalize technology, financing, and development costs

Outputs:

1. Proposed financing/commitments and organization structure
2. Detailed economic models
3. Vendors selected
4. Completed environmental reviews and finalized permits
5. Net-metering and interconnection agreement
6. Transmission finalized, if necessary



4 Implementation





Step 4: Implementation



Purpose: Contract for, realize physical construction of project

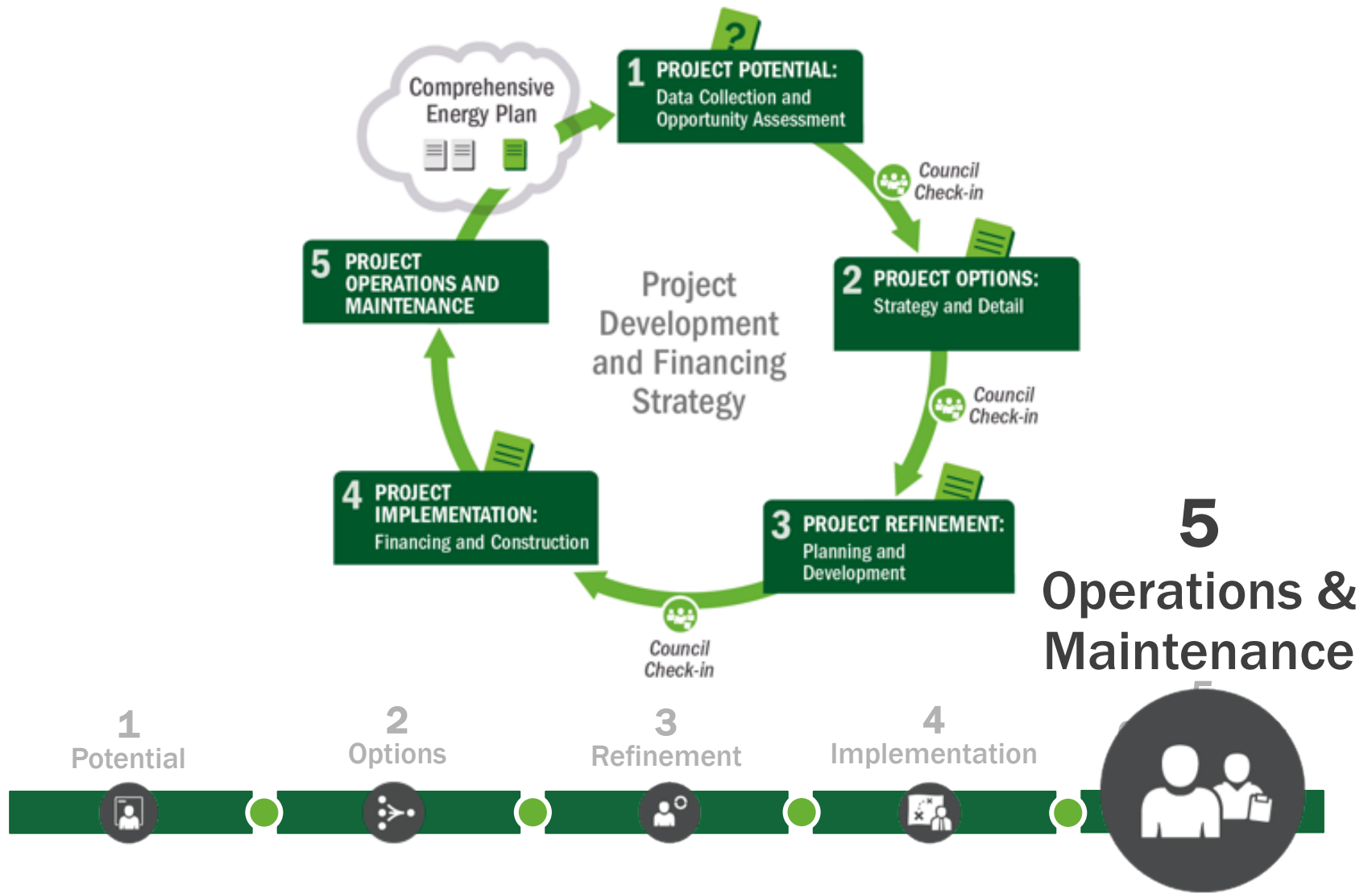
Tasks:

1. Finalize project agreements
2. Finalize vendor contracting process
3. Finalize preconstruction tasks
4. Realize construction and equipment installation
5. Realize interconnection and net metering
6. Realize project commissioning leading to operation

Output: Completed project (operation)

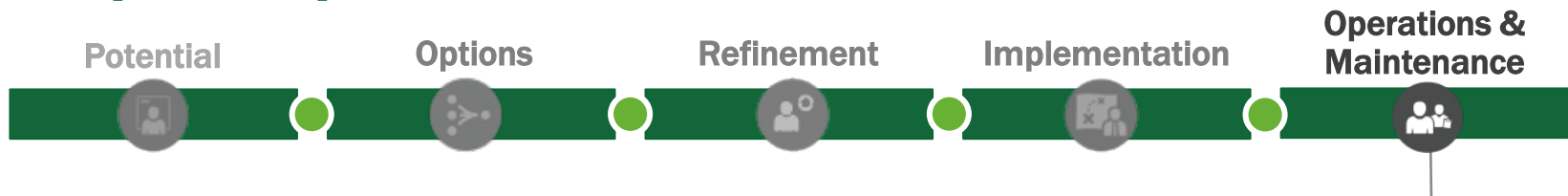


Project Development Process





Step 5: Operations & Maintenance



Purpose: Conduct or ensure ongoing operations and maintenance (O&M), including repair and replacement (R&R)*

O&M Costs:

- Equipment maintenance and upkeep
- Gearbox/inverter replacement
- Insurance
- Labor
- Extended warranty agreements

Maintenance:

- If **leasing**, lessor often manages maintenance
- If **power purchase agreement (PPA)**, vendor typically manages maintenance

**Especially if owner – role of highest O&M risk*



Photo from Florida Solar Energy Center, NREL 14728



Not Quite Done!

- Check back in with planning document – update as necessary
- Identify next potential project from plan

