Goals and objectives:

• Promote Indian tribal energy development, efficiency, and use
• Reduce or stabilize energy costs
• Enhance and strengthen Indian tribal energy and economic infrastructure relating to natural resource development and electrification
• Bring electrical power and service to Indian land and the homes of tribal members

Energy Policy Act of 2005, Title V, Sec. 502
Why Complete a Renewable Energy Project?

- Income
- Jobs
- Experience
- Cost savings
- Cost stabilization
- Tax revenue
- Industry exposure
- Energy reliability
- Self reliance
- Environmental sustainability

Benefits vary based on the type and scale of projects.
Agenda

• Overview of training purpose and structure
• Project development and financing key concepts (addressed in context)
• Project development process and decision points
PROJECT DEVELOPMENT AND FINANCING COURSES OVERVIEW: PURPOSE AND STRUCTURE
Purpose of Courses

• Provide a **framework** for renewable energy project development and financing for Tribes
• Set and manage **expectations** of project development
• Identify **decision points** and the information needed to effectively make **decisions**
• Identify available **tools** for use in project development
• Provide **examples** of relevant projects
Course Audiences

Tribal Leaders
- Primary decision makers
- Understand terminology
- Understand key decision points and factors influencing them

Staff/Project Management
- May be self-managing project or managing consultants
- Communicate at key points with decision makers
- Require in-depth knowledge of process
Course Structure

**Essentials**
Basic process, decisions, and concepts for project development
*Audience:* All involved in project

**Advanced/In-Depth**
Detailed, academic information for deep understanding of concepts
*Audience:* Project and contract managers

**Facility**
Comprehensive, in-depth process pathways for project development and financing by project scale
*Audience:* Decision makers and project and contract managers

**Community**
Comprehensive, in-depth process pathways for project development and financing by project scale
*Audience:* Decision makers and project and contract managers

**Commercial**
Comprehensive, in-depth process pathways for project development and financing by project scale
*Audience:* Decision makers and project and contract managers
Terminology in These Courses

Why is it important?
• Provides common language for internal discussion
• Assists in interaction with external organizations
• Increases credibility in project development

What does it include?
• Common terms and language for project development
• Acronyms for and roles of:
  – Federal agencies
  – Common federal and state policies

Your resource for reference: DOE-IE Course Terminology Guide
Terminology: Project Scale

Facility
Definition: single building system
Primary purpose: offset building energy use

Community
Definition: multiple buildings, campuses
Primary purpose: offset community energy costs, energy self-sufficiency

Commercial
Definition: stand-alone project
Primary purpose: revenue generation, financial self-sufficiency

Photos by NREL (top to bottom): PIX 09373, PIX 18077, PIX 13327
Determining Project Scale: What is the goal?

Goal Options:
- Price Offset/Energy Self Generation
- Revenue Generation

Information Needed:

Facility
- Savings opportunity
- Self-power opportunity
- Utility interconnection
- 1 month to 1 year

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

Commercial
- Competing power price
- Offtaker options
- Transmission options
- 3 to 5 years
Today’s Courses

**Essentials**
Basic process, decisions, and concepts for project development  
*Audience:* All involved in project

**Advanced/In-Depth**
Detailed, academic information for deep understanding of concepts  
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Comprehensive, in-depth process pathways for project development and financing by project scale  
*Audience:* Decision makers and project and contract managers
Curriculum History and Expectations for Today

- Provide information on project development
- Your feedback on each course structure and content

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Course Development Begins</td>
<td>Pilot Roll-Out</td>
<td>Revision/Comment Incorporation from Pilot</td>
<td>Tohono O’odham &amp; Oklahoma Tribal Leader Forum Revised Rollout of Essentials and</td>
<td>Completion of All Courses</td>
</tr>
</tbody>
</table>
PROJECT DEVELOPMENT PROCESS
Project Development Process: What is it?

- Framework based on experience
- Decision-point based
- Project development is iterative
- Delaying or deciding against a project that does not meet current goals is a viable outcome and option
1 Potential

2 Design

3 Refinement

4 Implementation

5 Operations & Maintenance

Comprehensive Energy Plan

1 PROJECT POTENTIAL: Data Collection and Opportunity Assessment

5 PROJECT OPERATIONS AND MAINTENANCE

2 PROJECT OPTIONS: Strategy and Detail

4 PROJECT IMPLEMENTATION: Financing and Construction

3 PROJECT REFINEMENT: Planning and Development

Council Check-in

Project Development and Financing Strategy
Design

1. Potential
2. Refinement
3. Implementation
4. Operations & Maintenance

1. Potential: Data Collection and Opportunity Assessment
2. Refinement: Strategy and Detail
3. Implementation: Planning and Development
5. Operations and Maintenance
Project Development and Financing Strategy

1. PROJECT POTENTIAL: Data Collection and Opportunity Assessment
2. PROJECT OPTIONS: Strategy and Detail
3. PROJECT REFINEMENT: Planning and Development
4. PROJECT IMPLEMENTATION: Financing and Construction
5. PROJECT OPERATIONS AND MAINTENANCE

4. Implementation

1. Potential
2. Design
3. Refinement
4. Implementation
5. Operations & Maintenance
Key Concepts

- Risk and Uncertainty
- Levelized Cost of Energy (LCOE)
- Tax Equity Partnership
- Roles of the Tribe
- The Project Team

In-depth information on each key concept available in Advanced Courses
### Key Risks in Project Development

<table>
<thead>
<tr>
<th>Area</th>
<th>Risks</th>
</tr>
</thead>
</table>
| Development           | • Concept and scoping  
• Power pricing  
• Access to power markets (adequacy and availability of transmission) |
| Site                  | • Site control  
• NIMBY/BANANA                                                                                       |
| Permitting            | • Environmental studies  
• Archaeological, historical, cultural significance  
• Federal Aviation Administration restrictions                                                        |
| Finance               | • Capital availability  
• Credit-worthy offtaker  
• Incentive availability risk and regulatory risk                                                      |
| Construction/Completion| • Engineering, procurement, and construction difficulties  
• Cost overruns  
• Schedule                                                                                           |
| Operating             | • Output shortfall  
• Technology O&M  
• Transmission/curtailment                                                                            |

Sources: Adapted from Holland & Hart, RE Project Development & Finance & Infocast, Advanced RE Project Finance & Analysis
Step 1: Project Potential

Gather all relevant data in order to make an educated decision about pursuing projects:

- Energy resources
- Technology options
- Possible sites for project locations
- Tribal facility electric cost data, regulations, and interconnection requirements
- Potential markets and paths to market for project power and renewable sales
- Tribal role options
**Step 1: Decisions**

<table>
<thead>
<tr>
<th>Potential</th>
<th>Options</th>
<th>Refinement</th>
<th>Implementation</th>
<th>Operations &amp; Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Decisions:

<table>
<thead>
<tr>
<th>Why do a project?</th>
<th>Inputs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why do a project?</td>
<td>Project Goal</td>
</tr>
<tr>
<td></td>
<td>Powers Users</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the energy environment?</th>
<th>Inputs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the energy environment?</td>
<td>Energy Context</td>
</tr>
<tr>
<td></td>
<td>Energy Costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What would a project look like?</th>
<th>Inputs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What would a project look like?</td>
<td>Site Options</td>
</tr>
<tr>
<td></td>
<td>Resource Options</td>
</tr>
<tr>
<td></td>
<td>Technology Options &amp; Costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What is the Tribe’s role?</th>
<th>Inputs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the Tribe’s role?</td>
<td>Role Options</td>
</tr>
<tr>
<td></td>
<td>Tribal Resources</td>
</tr>
</tbody>
</table>
### Step 1: Inputs and Actions

#### Why do a project?

<table>
<thead>
<tr>
<th>DECISION MAKER</th>
<th>INFORMATION NEEDED</th>
<th>TOOLS/RESOURCES</th>
<th>STAFF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Goal</strong></td>
<td>Deliver project goal parameters to staff</td>
<td>Jobs &amp; Economic Development Impact Models</td>
<td>Identify potential roles for tribe in project</td>
</tr>
<tr>
<td><strong>STAFF</strong></td>
<td>Identify potential power users</td>
<td>– Facility and community: Energy bill analysis</td>
<td>Select and meet with potential power purchasers to discuss project opportunities</td>
</tr>
<tr>
<td><strong>Power Users</strong></td>
<td>• Facility and community: Determine onsite load/need</td>
<td>• Facility and community: Current energy costs</td>
<td>– Regional buyers – utilities, military, private companies</td>
</tr>
<tr>
<td></td>
<td>• Commercial: Identify potential power buyers in area</td>
<td>• Commercial: Current energy fuels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify potential transmission capability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Outline utility rules related to power sales</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Step 1: Inputs and Actions

#### Potential

#### Options

#### Refinement

#### Implementation

#### Operations & Maintenance

---

## What is the project environment?

<table>
<thead>
<tr>
<th>STAFF</th>
<th>INFORMATION NEEDED</th>
<th>TOOLS/RESOURCES</th>
<th>DECISION MAKER</th>
</tr>
</thead>
</table>
| Energy Context | - Develop (or contract) market context | - Utility costs  
- Utility rules regarding interconnection/net metering/transmission  
- Regional power market  
- Policy context: federal/state/local applicable rules, incentive, grant opportunities | DOE-IE template for market context (resources packet) | Review report, understand primary market drivers |

---

**Utility costs**

**Utility rules regarding interconnection/net metering/transmission**

**Regional power market**

**Policy context: federal/state/local applicable rules, incentive, grant opportunities**
## What would a project look like?

### Resource Options

<table>
<thead>
<tr>
<th><strong>STAFF</strong></th>
<th><strong>INFORMATION NEEDED</strong></th>
<th><strong>TOOLS/RESOURCES</strong></th>
<th><strong>DECISION MAKER</strong></th>
</tr>
</thead>
</table>
| Assess resource and site options | • Energy resources available  
• Available sites  
• Alternative use options | Existing resource assessment  
Renewable Energy Atlas  
In My Back Yard | Preliminary selection of project location and type |

### Technology Options & Costs

<table>
<thead>
<tr>
<th><strong>STAFF</strong></th>
<th><strong>INFORMATION NEEDED</strong></th>
<th><strong>TOOLS/RESOURCES</strong></th>
<th><strong>DECISION MAKER</strong></th>
</tr>
</thead>
</table>
| Identify and price potential technology options | • Tribal role in project  
• Technology costs | • [www.nrel.gov/learning/re_solar.html](http://www.nrel.gov/learning/re_solar.html)  
• [www.nrel.gov/analysis/tech_costs.html](http://www.nrel.gov/analysis/tech_costs.html)  
• Request for proposals for developer | Select appropriate technologies, approve |
## Step 1: Inputs and Actions

### Potential

**Opportunities**

- Evaluation of tribal role options relative to goals
- Tribal goals and resources

**Restraints**

- Key Concept: Tax Equity Partnership
- Key Concept: Tribal Role Options

**Decision Maker**

- Decide on appropriate tribal role

### Options

**Resources**

- Evaluate tribal role options relative to goals
- Tribal goals and resources

**Processes**

- Key Concept: Tax Equity Partnership
- Key Concept: Tribal Role Options

**Programs**

- Decide on appropriate tribal role

### Refinement

**Staff**

- Evaluate tribal role options relative to goals
- Tribal goals and resources

**Information Needed**

- Key Concept: Tax Equity Partnership
- Key Concept: Tribal Role Options

**Tools/Resources**

- Decide on appropriate tribal role

### Implementation

**Operation & Maintenance**

- Evaluate tribal role options relative to goals
- Tribal goals and resources

- Key Concept: Tax Equity Partnership
- Key Concept: Tribal Role Options

- Decide on appropriate tribal role

### What is the Tribe’s role?

<table>
<thead>
<tr>
<th>STAFF</th>
<th>INFORMATION NEEDED</th>
<th>TOOLS/RESOURCES</th>
<th>DECISION MAKER</th>
</tr>
</thead>
</table>
| Tribal Resources | Evaluate tribal role options relative to goals | Tribal goals and resources | • Key Concept: Tax Equity Partnership  
• Key Concept: Tribal Role Options | Decide on appropriate tribal role |
## Key Concept: Tribal Role Options

<table>
<thead>
<tr>
<th>Title</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Company</strong></td>
<td>Legal entity that owns the project</td>
</tr>
<tr>
<td><strong>Landowner/Site Owner</strong></td>
<td>Legal and/or beneficial owner of land and natural resources</td>
</tr>
<tr>
<td><strong>Sponsor/Developer</strong></td>
<td>Organizes all of the other parties and typically controls and makes an equity investment in the company or other entity that owns the project</td>
</tr>
<tr>
<td><strong>Engineering Procurement and Construction Contractor (EPC)</strong></td>
<td>Construction contractor provides design, engineering, and construction of the project</td>
</tr>
<tr>
<td><strong>Operator</strong></td>
<td>Provider of the day-to-day O&amp;M of the project</td>
</tr>
<tr>
<td><strong>Feedstock Supplier</strong></td>
<td>Provider of the supply of feedstock (i.e., energy, raw materials) to the project (e.g., for a power plant, the feedstock supplier will supply fuel)</td>
</tr>
<tr>
<td><strong>Product Offtaker</strong></td>
<td>Generally enters into a long-term agreement with the project company for the purchase of all the energy</td>
</tr>
<tr>
<td><strong>Lender</strong></td>
<td>A single or group of financial institutions that provide a loan to the project company to develop and construct the project and that take a security interest in all of the project assets</td>
</tr>
<tr>
<td><strong>Tribal Host</strong></td>
<td>Primary sovereign of project site</td>
</tr>
</tbody>
</table>
## Key Concept: Tribal Role Options

<table>
<thead>
<tr>
<th>Role</th>
<th>Opportunity</th>
<th>Constraints</th>
<th>Comments</th>
</tr>
</thead>
</table>
| **Project Developer**       | Control and self-determination of project; potential for profits             | • Investors require experience  
• Development risks without portfolio diversification may not make business sense  
• Community investment portfolio may not seek high risk/return investments                                                                 | • Tribal interests may be best served by outsourcing this risk  
• Assembling a portfolio of projects is a typical method to mitigate risk                       |
| **Lender/Capital Provider** | Participate financially in project with lower risk                          | • Requires ready capital  
• May be cost prohibitive to document and manage a single debt transaction                                                                            | Requires knowledge of lending practices                                                       |
| **Investor**                | Provide cash for project development                                         | Requires ready capital, or unique source of capital that provides market advantage (like NMTC)                                                                                                               | • Must compete with other investment opportunities  
• Option for Tribes with limited lands                                                           |
| **Resource Owner (Lessor)** | Low risk, known reward, consistent income                                    | Limited project control                                                                                                                                                                                  | Limited upside, limited risk                                                                  |
| **Off-Taker**               | Purchasing clean energy from an “on-site” provider; security                 | Limited investment, economic development, and capacity building opportunity                                                                                                                               | Implies load-serving entity (utility), or some other purchasing demand                          |
Key Concept: Tribal Role Options

Project Participants

- **Resource Owner**: Rent/Royalty $\$, Access/Site Control
  - Development Equity $\$
  - Income: 1% Pre-Flip, 95% Post-Flip

- **Project Developer**: Income: 99% Pre-Flip, 5% Post-Flip
  - Equity Investment $\$

- **TAX EQUITY INVESTORS**: ITC, PTC, MACRS
  - Rent/Royalty $\$

- **Utility/Offtaker**: Equity Investment $\$
  - Debt Capital $\$
  - Payments
  - Electricity

- **Lender/Capital Provider**: Payments

Key Concept: Tax Equity Partnerships

- Tribe can benefit from tax equity incentives without being taxable

- Tax equity can lower capital costs for a qualifying project significantly (40%-50%)

- Tribe benefits by either reduced electricity costs from the renewable project, or offering a more competitive price for energy/RECs from the project

- Tribes can partner with 3rd party tax investors and/or developers to gain this advantage
Key Concept: Tribal Role Options

Project Developer

- Risk and complexity increases with project scale *(seek experienced legal counsel)*
- Developing projects is a specialized, high risk venture
- Typically, developers mitigate risk through project portfolios (diversification) and use of 3rd party equity investment *(Business risks must be considered and mitigated)*

**Tribal Examples:**
Few, if any examples exist—and for good reason considering the risk and cost of entering a project without a development partner. It can be done, but must be carefully considered.

Resource Owner

- Right to “capture” the resource. A project might pay a rent and/or royalty payment to the landowner in exchange for land access *(subject to market conditions)*
- The Tribe may also have the right, and choose to levy taxes on the project, generating tax revenue *(subject to market conditions)*
- This is a low-risk, and fairly straightforward method for a tribal entity to participate in a project *(seek experienced legal counsel)*

**Tribal Examples:**
- Tribe in the SW leases land to a wind project for rent and tax revenue (CA)
- Nevada Tribe considering Rent/Royalty structure and tax revenue for Geothermal project (NV)
- Solar projects under consideration by several Tribes in AZ and NM, who can participate in this way

Tribal Participation Options: Lender/Capital Provider

- Lending money to the project, or other capital such as a New Markets Tax Credit (NMTC) allocation is possible given tribal capacity to do so (subject to market conditions)
- Compensation to the Tribe or tribal entity for use of capital provides greater financial exposure—also incurs risk (risks must be considered and mitigated)
- This is a medium-risk, more complex method for a Tribal entity to participate in a commercial scale project (seek experienced legal counsel)

**Tribal Examples:**
- A Tribe in the NE is considering using a NMTC allocation to purchase a majority percent ownership of project equity
- California Tribe has option to provide equity capital to purchase a minority project interest

Utility or Offtaker

- Being a long-term purchaser of a commercial scale project is likely limited to Tribes with utilities, or a future tribal utility with sufficient demand (*subject to market conditions*).
- Benefits may accrue to the purchaser of energy by fixing supply costs (hedge against rising prices), security (*risks must be considered and mitigated*).
- This is a medium-risk, more complex method for a tribal entity to participate in a commercial scale project (*seek experienced legal counsel*).

**Tribal Examples:**
- An Arizona Tribe has the potential to purchase energy through a tribally-owned utility from future solar projects.
- Fewer Tribes have electricity demand sufficient to warrant being the offtaker of a commercial scale project.

Step 1: Outputs

- Project Scale
- Resource and Market Context
- Savings/Production Potential
- Preliminary Sites Options
- Tribal Role Options
2 Design

1 Potential

3 Refinement

4 Implementation

5 Operations & Maintenance

1 PROJECT POTENTIAL: Data Collection and Opportunity Assessment

2 PROJECT OPTIONS: Strategy and Detail

3 PROJECT REFINEMENT: Planning and Development

4 PROJECT IMPLEMENTATION: Financing and Construction

5 PROJECT OPERATIONS AND MAINTENANCE

Comprehensive Energy Plan

Council Check-in

Council Check-in

Council Check-in

Council Check-in

Council Check-in
Step 2: Strategy and Detail

• Identify technology and start procurement process
• Identify final offtaker and start agreement process
• Identify financing options
• Estimate potential value to the Tribe
• Initiate necessary permits
• Determine whether development on specific project concepts should be stopped
Step 2: Inputs

- Project Scale
- Resource and Market Context
- Savings/Production Potential
- Preliminary Sites Options
- Tribal Role Options
**Step 2: Decisions**

**Supporting decisions:**

- Determine specific technology options (staff)
- Set aside land for project development (decision maker)
- Select appropriate structure (decision maker)
- Pursue partnership or funding (staff)
- Pursue appropriate organizational structure (staff)
Step 2: Technology Comparisons

Technology Characteristics
- Output (over time)
- Initial Cost
- Operation and Maintenance Cost
- Land use per output
- Commercially available
Step 2: Technology Choice Matters

- DOE-IE technology specific webinars: www.energy.gov/indianenergy/resources/education-and-training
- Procurement specifications detailed in advanced course
Step 2: Offtaker Identification

- Identify who/what will use the power
- Varies depending on project scale
- Agreements can be simple or complicated
- Need to understand early on in order to determine project economics and because agreement times can be lengthy
Step 2: Ownership Structure Options

- Direct ownership
- Traditional lease/royalty structure
- Partnering
  - Flip
  - Sale Leaseback
  - Lease Pass-Through

Key Question: What viable ownership structure options are attractive to the community?
### Step 2: Tax Equity Structure Options

<table>
<thead>
<tr>
<th>Structures</th>
<th>Overview</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flip</td>
<td>Simple, two participants (Tax Equity and Developer)</td>
<td>99%/1% allocations until Flip (approx. 6 years) then 5%/95%</td>
</tr>
<tr>
<td>Sale Leaseback</td>
<td>More complex, at least two participants (Owner/Tax Equity, Lessee)</td>
<td>Developer sells completed project to Tax Equity, leases it back</td>
</tr>
<tr>
<td>Lease Pass-Through</td>
<td>More complex, at least two participants (Tenant/Tax Equity, Landlord)</td>
<td>Land Lord majority owned by Developer, leases to Tenant, majority owned by tax equity</td>
</tr>
</tbody>
</table>

Partner identification and evaluation strategies available in Advanced Courses
Key Concept: Levelized Cost of Energy (LCOE)

- Calculates present value of total cost of building and operating a power plant over an assumed life cycle, expressed in real dollars to remove the impact of inflation.

- Allows the comparison of different technologies (i.e. wind, solar, natural gas) of unequal life spans, different capital cost, risk, return, and capacities.

- Critical to making an informed decision to proceed with development of facility-, community-, or commercial-scale project.
Key Concept: Levelized Cost of Energy (LCOE)

Renewable has a lower LCOE, compared to retail LCOE. How much lower depends on project specifics.
Step 2: Initiating Permits

- Identify necessary permits, varying by scale
- Can be local, state, federal
- Can be costly and time intensive

Scale specific courses offer detail on permit types
Step 2: Outputs

- Decision on resource type
- Decision on ownership structure
- Understanding the permit needs and process
- Narrowing of technology options
Refinement

1. Potential
2. Design
4. Implementation
5. Operations & Maintenance
Step 3: Purpose

- Confirm or update initial assumptions for projects
- Identify project team (select partners)
- Complete necessary fundraising tasks required for financing and construction
- Confirm potential success, or eliminate project from further consideration
Step 3: Inputs

- Decision on resource type
- Decision on ownership structure
- Understanding the permit needs and process
- Narrowing of technology options
Step 3: Decisions

Major Decision: Start construction of project?

- Supporting Decisions and Actions
  - Project Team Identification
  - Vendor Identification/Procurement
Key Concept: Project Team

• Project team includes everyone in project development, construction, and operations
• Can include people involved in planning process
**Step 3: Team Member Skills**

- **Tribal Members**
  - Leadership, staff, community members
  - Attorneys, engineers, professionals,

- **Developer**
  - Business managers, engineers, permitting specialists, investors, banks, attorneys, accountants, power marketers, procurement specialists, communications, public relations, government relations, corporate finance, project finance, construction managers, O&M specialists, asset managers, etc.

- **Utility**
  - Engineers, attorneys, planning specialists, operations specialists, regulatory specialists, finance, accounting, public relations, communications, systems operators, construction and field personnel, maintenance and emergency operations, etc.
Step 3: Revisit and Finalize All Aspects

- Timing
- Funding
- Site
- Technology
- Offtaker

- Interconnection
- Environmental reviews
- Permitting
- Financing
- Agreements
Step 3: Finalize Project Costs

Technology Costs
- Solar equipment and construction
- PV Maintenance Service
- Monitoring in out years
- Inverter Warranty

Development Costs
- Interconnection Studies
- Site Survey
- Legal Consulting (PPA)
- Geotechnical Study
- Financing Support
- Legal (Lease)
- Legal (financing)
- Environmental Studies

Financing Costs
- Loan interest
- Initial operating expenses
- Payments
Step 3: Identify Vendors

Evaluation of vendors includes:

- System size
- First year output
- Derate factor
- Total costs of project
- Levelized cost of energy
- Fencing
- Site preparation
- Operations and maintenance plan
- Type of technology and other parts
Step 3: Outputs

- Proposed financing/commitments and organization structure
- Detailed economic models
- Vendors selected
- Completed environmental reviews and finalized permits
- Offtake and transmission/interconnection agreement
4
Implementation

1 Potential
2 Design
3 Refinement
4 Implementation: Financing and Construction
5 Operations & Maintenance

1 PROJECT POTENTIAL: Data Collection and Opportunity Assessment
2 PROJECT OPTIONS: Strategy and Detail
3 PROJECT REFINEMENT: Planning and Development
4 PROJECT IMPLEMENTATION: Financing and Construction
5 PROJECT OPERATIONS AND MAINTENANCE

Comprehensive Energy Plan
Step 4: Purpose

- Financial close
- Finalize project agreements in anticipation of financial close and construction
- Complete design
- Finalize vendor contracting process prior to construction
- Finalize design and complete pre-construction tasks
- Complete construction and equipment installation
- Complete interconnection
- Commission project leading to commercial operations
Step 4: Inputs

- Proposed financing/commitments and organization structure
- Detailed economic models
- Vendors selected
- Completed environmental reviews and finalized permits
- Offtake and transmission/interconnection agreement
Step 4: Outputs

✓ Completed project (Commercial Operation)
✓ New ownership organization completed (if needed)
5 Operations & Maintenance
Step 5: Operations and Maintenance

Potential | Options | Refinement | Implementation

Operations & Maintenance

Photo by Dennis Schroeder, NREL/PIX 20340
Step 5: Purpose

- Implement operations and maintenance plan (contract or self)
Step 5: Operations and Maintenance Costs

- Equipment maintenance and upkeep
- Inverter replacement
- Insurance
- Labor and staffing
- Extended warranty agreements
Step 5: Outputs

Maintenance Plan Implementation

Photo by NREL/PIX 14952
Summary of Actions by Step

**Step 1:** Gather all relevant data in order to make first pass at potential project, understand tribal role options

**Step 2:** Estimate value to Tribe, begin to identify offtakers, partners, vendors

**Step 3:** Finalize economic assumptions and roles, interconnection and offtake agreements, partnerships, ownership structure

**Step 4:** Financial close and construction; vendor contracting completion; project commercially delivered

**Step 5:** Maintenance plan implementation

*Celebrate!*
Not quite done!

• Check back in with planning document – update as necessary
• Identify next potential project from plan
Key Concepts Review

- Risk and Uncertainty
- Levelized Cost of Energy (LCOE)
- Tax Equity Partnership
- Roles of the Tribe
- The Project Team

In-Depth information on each key concept available in Advanced Courses
Wrap Up: Project Development Process

1. **PROJECT POTENTIAL:** Data Collection and Opportunity Assessment
   - Comprehensive Energy Plan
   - Council Check-in

2. **PROJECT OPTIONS:** Strategy and Detail
   - Council Check-in

3. **PROJECT REFINEMENT:** Planning and Development
   - Council Check-in

4. **PROJECT IMPLEMENTATION:** Financing and Construction

5. **PROJECT OPERATIONS AND MAINTENANCE**
These courses were designed in coordination with Tracey LeBeau and Pilar Thomas of the DOE Office of Indian Energy, by a team including Dan Beckley, Elizabeth Doris, Paul Schwabe, and Bob Springer of the National Renewable Energy Laboratory; Joe Cruz and Matt Ferguson of The Reznick Group; Paul Dearhouse of the Dearhouse Group; and Carolyn Stewart of Red Mountain Energy Partners.

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THANK YOU