The Five-Step Process Framework for Project Development and Key Concepts
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
Project Uncertainty/Capitol at Risk

Unknowns

Investment

Revenue pays off invested $

Step 1, Step 2, Step 3

Step 4

Step 5

Development

Financial Close

Construction

Project

Operation
1 Potential

2 Options

3 Refinement

4 Implementation

5 Operations and Maintenance
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
Step 2: Roles, Business Structures, & Regulatory Considerations

Purpose: 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. Understand tribal role(s) and risk allocations/business structure
2. Identify permitting needs and site use considerations
3. Identify interconnection rules and net metering options with the local utility

Outputs:
1. Clarify tribal roles
2. Decide on business structure
3. Understand the permit needs and process
4. Understand interconnection and net-metering options
3
Refinement

1. Potential
2. Options
3. Implementation
4. 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

Comprehensive Energy Plan
**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
Step 4: Implementation

Purpose: Contract for and build the project

Tasks:
- Finalize pre-construction activities including project agreements—financial, contractual, and interconnection
- Start construction and equipment installation
- Interconnect project to the grid
- Start project commissioning leading to facility/community project operation

Output: Completed project (operation)
**Step 5: Operations & Maintenance**

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

**Task:**
- O&M agreements
- Warranties
- Monitoring system
- System performance
- Production guarantees
- Buyout Options

**Outputs:**
- Ensure responsible party carries out O&M/R&R*
- Measuring and tracking success
- Correlate with business plan and strategic energy plan
- Contract compliance
- Reporting of generation
- Met or exceeded energy and financial performance

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

• Check back in with planning document—update as necessary
• Identify next potential project from plan
Resources: On-Demand Curriculum

Access free courses anytime

- **Foundational Courses**
  Overview of specific renewable energy technologies, strategic energy planning, and grid basics

- **Leadership & Professional Courses**
  In-depth information on the components of the project development process and existing financing structures

[energy.gov/indianenergy/curriculum](http://energy.gov/indianenergy/curriculum)
Key Concepts

• Levelized Cost of Energy - SAM
• Sources of Capital
• Role of Tax Credits for Renewable Energy Development
Levelized Cost of Energy (LCOE)

- Measures lifetime costs divided by energy production, captured in $/megawatt-hour (MWh) or ¢/kilowatt hour (kWh)

- Calculates present value of the total cost of: a) building and b) operating a power plant over an assumed lifetime

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

Critical to making an informed decision to proceed with development of a facility or community energy project.
Simplified LCOE Concept

- **Annual Expenses**
- **Initial Costs Including Financing**
- **Annual Cost Per Year**
- **LCOE ($/MWh)**

Adapted from European Wind Energy Association, “Economics of Wind Energy,”
Using LCOE

Calculating and comparing LCOE can:

• Measure value across the longer term, showing probable life-cycle costs

• Highlight opportunities for tribes to develop different scales of projects (facility, community, or commercial)

• Inform decisions to pursue projects on an economic basis, compared to utility rates

Most renewable energy projects have zero fuel costs (with biomass being the possible exception)