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ITS221 Project Management   
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# Helena Community Solar Installation Project

## Abstract

The *Helena Community Solar Installation Project* aims to empower the Helena community by implementing a sustainable, community-led renewable energy solution. This project focuses on the design, procurement, and installation of a solar array system that will supply clean energy, reduce local carbon emissions, and promote energy independence. Supported by a diverse team including technical experts, community liaisons, and governance committees, the project emphasizes collaboration, safety, and environmental responsibility.

Through structured phases such as site preparation, equipment installation, and rigorous testing, the project maintains strict adherence to national and local standards. A comprehensive Quality Management Plan ensures that all components meet performance expectations and safety requirements. Additionally, the project incorporates transparent communication channels and feedback mechanisms to engage stakeholders and address community concerns promptly.

By fostering local involvement and prioritizing long-term sustainability, this initiative not only provides immediate energy solutions but also serves as a model for future community-led renewable energy projects. Upon completion, the Helena community will benefit from reduced utility costs, increased energy security, and an empowered local workforce skilled in clean energy technologies.

## Business Case

Executive Summary

The Helena Community Solar Installation Project proposes the development and deployment of a community-based solar array system in Helena. This project is designed to promote renewable energy adoption, reduce greenhouse gas emissions, and empower residents with sustainable energy independence. By harnessing solar technology, the project will lower energy costs, stimulate local job creation, and serve as a scalable model for future renewable initiatives in the region. The project will be delivered over 12 months, ensuring timely execution while maintaining quality and safety standards.

Problem Statement

The Helena community currently relies heavily on traditional, non-renewable energy sources, resulting in high utility costs and increased carbon emissions. Limited access to affordable renewable energy options prevents the community from reducing its environmental footprint and achieving energy security. Without intervention, Helena will continue to face rising energy expenses and vulnerability to external energy market fluctuations.

Project Description

The Helena Community Solar Installation Project focuses on the construction and commissioning of a solar photovoltaic (PV) system tailored to meet local energy demands. The initiative will be led by a dedicated project team working alongside community stakeholders, local government bodies, and technical experts. The scope of work includes site assessment, system design, equipment procurement, installation, testing, and operational handover. Community engagement and workforce development are embedded within the project strategy to maximize long-term value.

Strategic Alignment

This project aligns with regional goals for sustainable development, carbon footprint reduction, and community empowerment. It supports Helena’s clean energy initiatives, contributing to statewide renewable energy targets and helping the community transition toward a more resilient energy future. The project also advances social goals by offering educational opportunities and fostering local job creation in green technologies.

Expected Benefits

* Economic Savings: Reduction in electricity costs for community facilities and residents.
* Environmental Impact: Significant reduction in greenhouse gas emissions.
* Community Empowerment: Increased community involvement and awareness of renewable energy benefits.
* Job Creation: Employment opportunities in installation, maintenance, and future solar projects.
* Educational Opportunities: Skills training for local workforce and renewable energy awareness programs.

Cost Estimate

The total project budget is estimated at $450,000, distributed over 12 months, including design, procurement, construction, quality assurance, and operational costs. Cost control and monitoring measures will ensure the project remains within budget.

Risk Assessment

Key risks identified include:

* Weather Delays: Adverse conditions could impact installation timelines.
* Supply Chain Disruptions: Delays in equipment delivery may affect schedules.
* Community Engagement: Ensuring continuous and effective stakeholder communication.
* Regulatory Approvals: Possible delays in permits and inspections.
* Mitigation strategies include proactive scheduling, diversified supplier options, robust stakeholder communication plans, and early regulatory engagement.

Timeline

The project is scheduled for completion within 12 months, with major milestones including:

* Month 1-3: Planning and Design
* Month 4-6: Procurement and Site Preparation
* Month 7-10: Installation and Testing
* Month 11-12: Commissioning and Handover

Recommendation

It is recommended that the Helena Community Solar Installation Project proceed as proposed. The initiative offers significant long-term benefits for the Helena community, providing economic relief, environmental improvements, and social empowerment. The project’s alignment with local and state objectives, combined with proactive risk management and stakeholder engagement, makes it a sound and strategic investment in Helena’s future.

## Project Proposal

Project Overview

The Helena Community Solar Installation Project aims to design, construct, and commission a community-owned solar array in Helena, providing residents and local facilities with access to clean, affordable, and sustainable energy. Through this initiative, Helena will reduce its dependence on fossil fuels, lower electricity costs for community members, and actively contribute to environmental preservation. This project will also strengthen community engagement and foster local economic development through job creation and skills training.

Project Objectives

* Deploy Renewable Energy Infrastructure: Install a reliable and efficient solar array system tailored to Helena's energy needs.
* Lower Energy Costs: Provide sustainable savings on utility bills for the community.
* Reduce Carbon Emissions: Support Helena’s transition to a greener, more sustainable energy mix.
* Empower the Community: Engage local residents through education, outreach, and participation in project development.
* Stimulate Local Economy: Create green jobs and training opportunities in solar technology and system maintenance.

Project Scope

The project encompasses all phases of solar array development, including:

* Feasibility study and site assessment
* Detailed system design and engineering
* Procurement of solar panels and related equipment
* Construction and installation of the solar array
* System testing, commissioning, and grid connection
* Community engagement and training programs
* Operational handover and ongoing maintenance planning

Key Benefits

* Economic Savings: Reduced energy bills for community facilities and residents
* Environmental Impact: Contribution to Helena’s sustainability and climate goals
* Community Ownership: Enhanced community pride and participation
* Educational Opportunities: Public awareness campaigns and technical training for residents
* Scalability: Establishing a model for future renewable energy projects in Helena

Project Timeline

Estimated Duration: 12 months  
Phases:

* Months 1–3: Planning, site assessment, and design
* Months 4–6: Procurement and permitting
* Months 7–10: Construction and system installation
* Months 11–12: Testing, commissioning, and project closeout

Estimated Budget

Total Budget: $450,000  
Includes equipment costs, labor, permits, community outreach, and quality assurance measures.

Project Team and Stakeholders

* Project Sponsor: Dr. Linda Thornton
* Project Manager: Mark Ellis
* Technical Lead: Carla Mendoza
* Steering Committee: Helena Sustainability Council
* Community Stakeholders: Helena residents and local businesses
* Customer: The Helena Community

Risks and Mitigation

|  |  |
| --- | --- |
| **Risk** | **Mitigation Strategy** |
| Weather delays | Schedule flexibility and buffer time |
| Supply chain disruptions | Multiple vendor contracts and early procurement |
| Community engagement gaps | Regular updates, workshops, and feedback loops |
| Regulatory approvals | Early engagement with permitting authorities |

Conclusion & Call to Action

The Helena Community Solar Installation Project presents an exciting opportunity to create lasting positive changes in Helena. By investing in this project, we can deliver tangible economic, environmental, and social benefits for current and future generations. We seek the support and active participation of all stakeholders to bring this vision to life.

Let’s power Helena’s future—together.

## Project Charter

Project Title

Helena Community Solar Installation Project

Project Purpose and Justification

The Helena Community Solar Installation Project aims to deliver a community-owned solar energy solution that empowers residents, lowers energy costs, and advances local sustainability goals. Rising energy demands and increasing utility rates have made renewable energy solutions a priority. By transitioning to solar, Helena will reduce its environmental footprint, stimulate local economic growth, and strengthen community cohesion through shared ownership of energy infrastructure.

Project Objectives

* Install a 500-kW solar array to supply clean energy to the Helena community.
* Reduce annual community energy costs by an estimated 20%.
* Offset approximately 650 metric tons of CO₂ emissions per year.
* Engage local workforce and provide solar installation training to residents.
* Complete installation and commissioning by the end of Summer 2025.
* High-Level Project Requirements
* Complete site assessment and design within the first quarter.
* Secure necessary permits and approvals prior to procurement.
* Engage local vendors and contractors for equipment supply and construction.
* Ensure compliance with relevant safety and environmental regulations.
* Implement a community engagement and education plan.

High-Level Timeline

|  |  |  |
| --- | --- | --- |
| **Phase** | **Duration** | **Dates** |
| Project Initiation & Planning | 2 months | April–May 2025 |
| Site Assessment & Design | 2 months | April–May 2025 |
| Permitting & Procurement | 2 months | May–June 2025 |
| Construction & Installation | 3 months | June–August 2025 |
| Testing & Commissioning | 1 month | September 2025 |
| Project Closeout & Handover | 1 month | October 2025 |

Budget Summary

Total Project Budget: $450,000  
Includes design, materials, labor, permitting, training programs, and contingency.

Key Milestones

* Project Kickoff: April 15, 2025
* Permits Secured: June 1, 2025
* Construction Start: June 10, 2025
* System Installation Complete: August 31, 2025
* Commissioning & Handover: September 30, 2025

Project Stakeholders

|  |  |
| --- | --- |
| **Role** | **Name** |
| Project Sponsor | Katherine Langley |
| Project Manager | Marcus Whitaker |
| Technical Lead | Victor Chen |
| Customer | Helena Community |
| Steering Committee | Helena Sustainability Council |
| Program Manager | Elena Morales |
| Change Control Board | Elena Morales, Marcus Whitaker, Katherine Langley |

Risk and Mitigation Strategies

* Weather delays during construction — Plan for contingencies and flexible scheduling.
* Permitting delays — Begin engagement with authorities early in planning.
* Community concerns or opposition — Maintain open communication channels and hold town hall meetings.
* Supply chain disruptions — Secure multiple suppliers and order equipment early.

Assumptions

* Adequate sunlight and suitable site conditions confirmed by early assessment.
* Permits and regulatory approvals obtained on schedule.
* Active community participation and support.
* Availability of skilled labor and necessary equipment.

Constraints

* Project must be completed before the end of Q3 2025 to align with seasonal construction and funding timelines.
* Budget limitations require careful cost control.
* Environmental regulations must be strictly adhered to.

Approval Signatures

|  |  |
| --- | --- |
| **Name** | **Title** |
| Katherine Langley | Project Sponsor |
| Marcus Whitaker | Project Manager |
| Elena Morales | Program Manager |

## Project Brief

Project Overview

The Helena Community Solar Installation Project is a community-driven initiative aimed at installing a 500-kW solar array to provide sustainable, affordable, and locally owned renewable energy to the residents of Helena. By leveraging local resources, engaging stakeholders, and prioritizing environmental responsibility, the project seeks to reduce energy costs, lower carbon emissions, and empower the community with long-term energy independence.

Project Objectives

* Deliver and install a fully operational 500 kW solar array by end of Summer 2025.
* Reduce community energy costs by approximately 20% annually.
* Offset an estimated 650 metric tons of CO₂ emissions per year.
* Engage and train local workforce in solar installation and maintenance.
* Foster community engagement and education around renewable energy.

Scope of Work

* Conduct site assessment and system design.
* Obtain necessary permits and approvals.
* Procure equipment and hire local contractors.
* Install solar panels and integrate with existing infrastructure.
* Test, commission, and hand over the operational system.
* Provide community education on solar energy benefits and system maintenance.

Key Milestones

|  |  |
| --- | --- |
| **Milestone** | **Target Date** |
| Project Kickoff | April 15, 2025 |
| Permitting Approved | June 1, 2025 |
| Construction Begins | June 10, 2025 |
| Installation Completed | August 31, 2025 |
| System Commissioning | September 30, 2025 |
| Project Closeout | October 2025 |

Budget

Total Estimated Budget: $450,000

Includes equipment, labor, permitting, training, and contingency funds.

Project Team

* Project Sponsor: Dr. Linda Thornton
* Project Manager: Mark Ellis
* Technical Lead: Carla Mendoza
* Program Manager: Alicia Harper
* Customer: Helena Community
* Steering Committee: Helena Sustainability Council
* Change Control Board: Helena Energy Initiative Panel

Stakeholders

* Helena residents and businesses
* Local government and permitting authorities
* Contractors and suppliers
* Environmental advocacy groups
* Community training participants

Risks and Mitigation

* Weather Delays: Flexible scheduling and buffer time.
* Permitting Delays: Early engagement with authorities.
* Community Concerns: Regular updates and town hall meetings.
* Supply Chain Disruptions: Multiple suppliers and advance ordering.

Success Criteria

* Solar array operational and delivering clean energy by September 2025.
* Positive community feedback and engagement throughout the project.
* Project delivered on time and within budget.
* Measurable reduction in energy costs and carbon emissions.

Communication Plan

* Monthly progress reports via email.
* Weekly internal team meetings.
* Community updates via Helena’s public web portal and town halls.
* Formal escalation process for resolving issues.

## Project Scope Statement

Project Purpose and Justification

The purpose of the Helena Community Solar Installation Project is to design, procure, and install a 500-kW solar energy system that provides sustainable and cost-effective power to the Helena community. This project will reduce reliance on non-renewable energy sources, lower carbon emissions, and provide long-term financial savings for residents and businesses. It also promotes local job creation and community education on renewable energy benefits.

Project Objectives

* Install and commission a 500-kW solar array by September 2025.
* Achieve an estimated 20% reduction in energy costs for the community.
* Offset approximately 650 metric tons of CO₂ emissions annually.
* Engage and educate the local community on renewable energy practices.
* Deliver the project within the approved budget of $450,000.

Project Scope Description

The project scope includes:

* Site selection and preparation.
* System design and engineering.
* Permitting and regulatory compliance.
* Procurement of solar panels, inverters, and balance-of-system components.
* Installation of solar equipment and system integration.
* Testing, commissioning, and performance verification.
* Community engagement activities include training workshops and updates.
* Development of maintenance and operational guidelines.

Deliverables

* Completed and operational 500 kW solar array.
* Approved permits and inspection documentation.
* Training sessions for community members.
* Operations and maintenance manual.
* Final project report and performance summary.

Project Exclusions

* Energy storage systems (battery backup) are not included in this phase.
* Off-grid solutions; the system will integrate with the existing grid.
* Ongoing maintenance services post-installation (to be arranged separately).

Assumptions

* Required permits and approvals will be obtained on schedule.
* Weather conditions will allow construction during summer months.
* Equipment and materials will be available as planned.
* Community members will participate in engagement and training sessions.

Constraints

* Project completion deadline: September 30, 2025.
* Fixed budget: $450,000.
* Construction is limited to summer months to avoid weather delays.
* Compliance with all local, state, and federal regulations.

Acceptance Criteria

* System operational and connected to the grid.
* System meets or exceeds performance specifications.
* All permits and inspections successfully completed.
* Community stakeholders approve final deliverables.
* Project completed within budget and timeline.

## Team Charter

Project Overview

The Helena Community Solar Installation Project aims to deliver a 500-kW solar energy system to power local homes and businesses, reduce carbon emissions, and promote community engagement in renewable energy initiatives. The project team is dedicated to executing this project on time, within budget, and to the satisfaction of all stakeholders.

Team Purpose

The purpose of the project team is to collaboratively design, manage, and implement the Helena Community Solar Installation Project, ensuring the delivery of all objectives while promoting open communication, shared responsibility, and community involvement.

Team Objectives

* Complete project milestones according to schedule.
* Maintain high-quality standards throughout all project phases.
* Foster transparent communication among team members and stakeholders.
* Promote safety and environmental responsibility during construction and installation.
* Engage the Helena community in the project through outreach and education.

Team Roles and Responsibilities

| **Role** | **Name** | **Responsibilities** |
| --- | --- | --- |
| Project Sponsor | Katherine Langley | Provides funding, supports project alignment with strategic goals, and resolves high-level issues. |
| Project Manager | Marcus Whitaker | Leads project planning and execution, manages risks, schedules, and resources. |
| Program Manager | Elena Morales | Oversees coordination with broader energy initiatives and ensure alignment with community energy goals. |
| Technical Lead | Victor Chen | Provides technical guidance, oversees system design, and ensures quality standards. |
| Construction Manager | Dennis Tran | Supervises on-site construction activities and ensures safety compliance. |
| Community Liaison | Lydia Prescott | Manages community engagement, workshops, and stakeholder communication. |
| Procurement Specialist | Hannah Evans | Manages the procurement of solar components and ensures timely delivery. |
| Quality Assurance Officer | Trevor Scott | Ensures adherence to project standards and performs inspections and testing. |
| Change Control Board | Elena Morales, Marcus Whitaker, Katherine Langley | Reviews and approves all major scope or budget changes. |

Team Values and Norms

* Respect: All team members' contributions are valued.
* Accountability: Team members are responsible for their tasks and deliverables.
* Transparency: Open and honest communication is always expected.
* Collaboration: Team members will actively collaborate to overcome challenges.
* Safety: Safety protocols will be followed diligently in all project phases.

Decision-Making Guidelines

* Decisions will be made collaboratively, with input from relevant experts.
* For major decisions (budget changes, scope adjustments), approval from the Change Control Board is required.
* Urgent on-site decisions will be made by the Project Manager in consultation with the Technical Lead.

Conflict Resolution Process

1. Address conflicts directly between involved parties.
2. Escalate unresolved issues to the Project Manager.
3. If needed, involve the Project Sponsor or Change Control Board for resolution.

Communication Protocols

* Weekly team meetings to track progress.
* Monthly stakeholder updates via email and portal.
* Immediate notification for critical issues or risks.
* Shared project portal for documents and schedules.
* Use of standard templates for reporting and documentation.

Signatures

By signing below, team members agree to uphold the principles, roles, and responsibilities outlined in this charter.

| Name | Role |
| --- | --- |
| Katherine Langley | Project Sponsor |
| Marcus Whitaker | Project Manager |
| Elena Morales | Program Manager |
| Victor Chen | Technical Lead |
| Dennis Tran | Construction Manager |
| Lydia Prescott | Community Liaison |
| Hannah Evans | Procurement Specialist |
| Trevor Scott | QA Officer |

## Work Breakdown Structure (WBS)

(Level 1 to Level 3 detail)

1. Project Initiation

1.1 Develop Project Charter

1.2 Identify Stakeholders

1.3 Assemble Project Team

1.4 Hold Kick-off Meeting

2. Project Planning

2.1 Develop Project Management Plan

2.2 Site Analysis and Selection

2.3 Permitting and Approvals

2.4 Risk Management Planning

2.5 Procurement Planning

3. Design & Engineering

3.1 System Design

3.2 Engineering Drawings

3.3 Review & Approval of Designs

4. Procurement

4.1 Vendor Selection

4.2 Procurement of Solar Panels

4.3 Procurement of Inverters & Equipment

4.4 Delivery of Materials to Site

5. Construction & Installation

5.1 Site Preparation

5.2 Foundation Installation

5.3 Mounting Structure Installation

5.4 Panel Installation

5.5 Electrical Wiring & Connections

5.6 Inverter Installation

5.7 Testing & Commissioning

6. Community Engagement & Training

6.1 Community Workshops

6.2 Regular Updates to Stakeholders

6.3 Handover Training for Operations

7. Project Closeout

7.1 Final Inspections

7.2 Documentation Handover

7.3 Project Review & Lessons Learned

7.4 Final Report Submission

Project Schedule

| **Task** | **Start Date** | **End Date** | **Duration** |
| --- | --- | --- | --- |
| Project Initiation | March 3 | March 14 | 2 weeks |
| Project Charter & Kickoff | March 3 | March 7 | 1 week |
| Stakeholder Identification | March 8 | March 14 | 1 week |
| Project Planning | March 17 | April 11 | 4 weeks |
| Site Analysis | March 17 | March 28 | 2 weeks |
| Permits & Approvals | March 24 | April 11 | 3 weeks |
| Procurement Planning | April 1 | April 11 | 2 weeks |
| Design & Engineering | April 14 | May 2 | 3 weeks |
| System Design | April 14 | April 25 | 2 weeks |
| Design Approval | April 28 | May 2 | 1 week |
| Procurement | May 5 | June 6 | 5 weeks |
| Vendor Selection | May 5 | May 9 | 1 week |
| Material Procurement | May 12 | May 30 | 3 weeks |
| Delivery to Site | June 2 | June 6 | 1 week |
| Construction & Installation | June 9 | August 22 | 11 weeks |
| Site Preparation | June 9 | June 20 | 2 weeks |
| Foundation Installation | June 23 | July 4 | 2 weeks |
| Mounting Structure | July 7 | July 18 | 2 weeks |
| Panel Installation | July 21 | August 1 | 2 weeks |
| Electrical & Inverter Setup | August 4 | August 15 | 2 weeks |
| Testing & Commissioning | August 18 | August 22 | 1 week |
| Community Engagement | Throughout | Throughout | Ongoing |
| Workshops & Updates | April | August | Monthly |
| Project Closeout | August 25 | September 5 | 2 weeks |
| Final Inspections | August 25 | August 29 | 1 week |
| Handover & Training | September 1 | September 5 | 1 week |

## Requirements Gathering

Purpose

The purpose of this document is to capture, organize, and define the requirements for the Helena Community Solar Installation Project. These requirements will guide the planning, design, procurement, and construction phases, ensuring that the project meets stakeholder expectations and technical specifications.

Project Overview

The Helena Community Solar Installation Project aims to design, build, and commission a solar energy array to serve the Helena community. This project supports sustainability goals, reduces reliance on non-renewable energy, and promotes community engagement through shared ownership and benefits.

Methodology

Requirements were gathered through:

* Community consultations and public meetings
* Stakeholder interviews (city planners, utility providers, community representatives)
* Regulatory review (local building codes, environmental standards)
* Technical team workshops
* Review of similar renewable energy projects

Stakeholders Involved

* **Customer:** Helena Community
* **Project Sponsor:** Katherine Langley
* **Program Manager:** Elena Morales
* **Project Manager:** Marcus Whitaker
* **Technical Lead:** Victor Chen
* **Utility Providers:** Helena Energy Co.
* **Contractors and Vendors:** Selected through procurement process
* **Regulatory Authorities:** Local permitting and environmental bodies

Functional Requirements

| **ID** | **Requirement Description** | **Priority** |
| --- | --- | --- |
| FR-1 | Solar array must produce a minimum of 500 kW of power. | High |
| FR-2 | System must connect to the local power grid. | High |
| FR-3 | Remote monitoring capabilities for performance tracking. | Medium |
| FR-4 | Ability to expand the array in future phases. | Medium |
| FR-5 | Provide community access to energy usage dashboards. | Low |

Non-Functional Requirements

| **ID** | **Requirement Description** | **Priority** |
| --- | --- | --- |
| NFR-1 | System uptime of at least 98% annually. | High |
| NFR-2 | Compliance with local safety regulations and environmental standards. | High |
| NFR-3 | Minimal visual impact on surrounding community areas. | Medium |
| NFR-4 | Data privacy and cybersecurity for monitoring systems. | High |
| NFR-5 | Components must have at least a 20-year lifespan. | High |

Regulatory and Compliance Requirements

* Adherence to Helena city building codes.
* Compliance with state renewable energy regulations.
* Environmental impact assessments completed and approved.
* Grid connection agreements with Helena Energy Co.

Assumptions

* Permits and regulatory approvals will be granted in a timely manner.
* Adequate funding is secured for the full scope of the project.
* Community support remains positive throughout the project lifecycle.
* Vendors can supply necessary components within project timelines.

Constraints

* Seasonal construction window (Summer 2025).
* Fixed project budget.
* Coordination with utility provider schedules.
* Supply chain lead times for solar components.

**Approval Signatures**

| **Role** | **Name** | **Signature** | **Date** |
| --- | --- | --- | --- |
| Project Sponsor | Katherine Langley |  |  |
| Project Manager | Marcus Whitaker |  |  |
| Technical Lead | Victor Chen |  |  |
| Community Liaison | Lydia Prescott |  |  |

## Project Budget

Purpose

This document outlines the estimated budget for the Helena Community Solar Installation Project. It provides a detailed breakdown of projected costs across all project phases, ensuring alignment with funding availability and enabling effective cost control.

Budget Summary

| **Category** | **Estimated Cost (USD)** |
| --- | --- |
| Project Management | $20,000 |
| Design & Engineering | $35,000 |
| Permits & Approvals | $10,000 |
| Site Preparation & Civil Works | $40,000 |
| Equipment (Solar Panels, Inverters, Batteries) | $150,000 |
| Installation & Construction Labor | $80,000 |
| Electrical & Grid Connection | $30,000 |
| Testing & Commissioning | $15,000 |
| Community Engagement & Outreach | $5,000 |
| Contingency (10%) | $38,500 |
| **Total Estimated Budget** | **$423,500** |

Detailed Cost Breakdown

**A. Project Management**

* Planning and scheduling: $8,000
* Reporting and documentation: $4,000
* Risk management activities: $3,000
* Communication and coordination: $5,000

**B. Design & Engineering**

* System design: $20,000
* Engineering studies (load, environmental impact): $15,000

**C. Permits & Approvals**

* Local building permits: $5,000
* Environmental clearances: $3,000
* Grid connection application fees: $2,000

**D. Site Preparation & Civil Works**

* Land grading and clearing: $15,000
* Foundations and mounting structures: $25,000

**E. Equipment Procurement**

* Solar panels (high efficiency): $100,000
* Inverters and batteries: $40,000
* Mounting hardware and accessories: $10,000

**F. Installation & Construction Labor**

* Electrical work: $40,000
* Panel installation labor: $40,000

**G. Electrical & Grid Connection**

* Cables and connectors: $10,000
* Grid connection and switchgear: $20,000

**H. Testing & Commissioning**

* System testing: $7,500
* Final commissioning and inspection: $7,500

**I. Community Engagement**

* Public meetings and informational sessions: $3,000
* Educational materials and outreach: $2,000

**J. Contingency**

* Risk buffer for unforeseen costs (approx. 10% of total budget): $38,500

Funding Sources

| **Source** | **Amount (USD)** |
| --- | --- |
| City of Helena Grants | $150,000 |
| State Renewable Energy Incentive | $100,000 |
| Community Contributions | $50,000 |
| Private Donations & Sponsors | $75,000 |
| Contingency Reserve | $48,500 |
| **Total Funding** | **$423,500** |

Budget Management Approach

* **Monthly reviews** will be conducted to compare actual spending against budget forecasts.
* **Change requests** for any budget adjustments will follow the established change control process.
* The Project Manager, in coordination with the Program Manager and Project Sponsor, will be responsible for authorizing expenditures and monitoring cash flow.
* All costs will be tracked using the project accounting system, with reports shared at steering committee meetings.

Approval

| **Role** | **Name** | **Signature** | **Date** |
| --- | --- | --- | --- |
| Project Sponsor | Katherine Langley |  |  |
| Project Manager | Marcus Whitaker |  |  |
| Program Manager | Elena Morales |  |  |

## Project Communications Plan

Purpose

The purpose of this Communications Plan is to define how project information will be communicated to stakeholders. It ensures all stakeholders receive timely, accurate, and relevant information to support decision-making and promote project success.

Communication Objectives

* Maintain alignment and transparency among project stakeholders.
* Ensure timely dissemination of project updates, risks, and decisions.
* Facilitate effective collaboration within the project team and with external stakeholders.
* Support informed decision-making through clear and consistent messaging.

Key Stakeholders and Communication Needs

| **Stakeholder Group** | **Communication Needs** | **Frequency** |
| --- | --- | --- |
| Project Sponsor (Katherine Langley) | High-level updates, budget status, milestone achievements | Monthly |
| Program Manager (Elena Morales) | Progress reports, issues escalation, risk updates | Bi-weekly |
| Project Team | Daily updates, task assignments, coordination | Daily |
| Helena Community (Customer) | Community engagement updates, educational sessions | Monthly / As needed |
| Change Control Board | Change requests, impact analysis | As required |
| Steering Committee | Strategic updates, progress presentations | Monthly |
| Technical Lead (Victor Chen) | Technical design and execution updates | Weekly |
| Vendors & Contractors | Schedule confirmations, technical specs | As needed |

Communication Methods and Technologies

* **Email:** Primary mode for formal communications and documentation sharing.
* **Project Management Tool (e.g., Asana, MS Project):** Task tracking, updates, and document repository.
* **Virtual Meetings (Zoom / Teams):** Regular team check-ins, stakeholder briefings.
* **Phone / Text:** For urgent matters and quick clarifications.
* **Community Web Portal:** Public-facing updates and educational content.
* **In-person Meetings:** Site visits and community engagement sessions.

Communication Flow

* The Project Manager is the central point of contact and ensures flow of communication between all stakeholders.
* Project updates will flow upward from the project team to the Project Manager and then to the Program Manager, Steering Committee, and Sponsor.
* Information to the public and community will flow through approved community engagement channels managed by the Outreach Coordinator.

Communication Schedule

| **Communication Type** | **Audience** | **Format** | **Frequency** | **Owner** |
| --- | --- | --- | --- | --- |
| Project Kick-off Meeting | All Stakeholders | Virtual Meeting | Once at start | Project Manager |
| Status Report | Program Manager, Sponsor | Email Document | Monthly | Project Manager |
| Team Stand-ups | Project Team | Virtual/Phone | Daily | Project Manager |
| Community Updates | Helena Community | Web Portal / In-person | Monthly | Community Outreach Lead |
| Steering Committee Briefing | Steering Committee | Virtual Meeting | Monthly | Project Manager |
| Issue Escalation | Sponsor, Program Manager | Email / Phone | As needed | Project Manager |
| Change Requests | Change Control Board | Email + Documentation | As needed | Project Manager |

Sensitive Information Handling

* Sensitive and confidential information (e.g., vendor contracts, financial details) will be shared on a secure drive or through encrypted email.
* Authorization for sharing sensitive information must come from the Project Sponsor or Program Manager.

Constraints

* Community participants may have limited internet access—alternative formats like printed materials or in-person meetings will be utilized.
* Project team members are in different time zones, so asynchronous updates (via PM tools) will complement live meetings.

Change Management in Communication

* Any changes to the communication process will be documented and approved by the Project Manager.
* Updates will be shared in the next scheduled team meeting and through written notification.

Escalation Process

* Issues that cannot be resolved within the team will be escalated to the Program Manager.
* If further escalation is needed, the Project Sponsor will be engaged.
* A clear log of escalations will be maintained for accountability and tracking.

Approval

| **Name** | **Role** | **Signature** | **Date** |
| --- | --- | --- | --- |
| Katherine Langley | Project Sponsor |  |  |
| Marcus Whitaker | Project Manager |  |  |
| Elena Morales | Program Manager |  |  |

## Risk Register

| **Risk ID** | **Risk Description** | **Impact** | **Likelihood** | **Priority** | **Mitigation Strategy** | **Owner** | **Status** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| R-01 | Delays in equipment delivery due to supplier shortages | High | Medium | High | Confirm supplier timelines early, identify alternative suppliers, maintain buffer stock | Technical Lead | Open |
| R-02 | Community opposition to installation sites | Medium | Low | Medium | Conduct early engagement, hold town hall meetings, provide transparent project information | Community Outreach Lead | Open |
| R-03 | Budget overruns due to unforeseen site conditions | High | Medium | High | Conduct detailed site assessments, maintain contingency funds | Project Manager | Open |
| R-04 | Adverse weather delays construction | High | Medium | High | Schedule work in summer months, build schedule flexibility | Project Manager | Open |
| R-05 | Technical issues with solar equipment | High | Low | Medium | Use reputable suppliers, ensure thorough testing and commissioning | Technical Lead | Open |
| R-06 | Safety incidents during construction | High | Low | High | Enforce strict safety protocols, conduct regular safety audits and training | Safety Officer | Open |
| R-07 | Changes in local regulations or permitting delays | Medium | Low | Medium | Monitor regulatory changes, maintain good communication with authorities | Program Manager | Open |
| R-08 | Limited internet access for community communications | Low | Medium | Low | Use physical mailers and in-person events as backups | Community Outreach Lead | Open |
| R-09 | Escalation of costs due to inflation | Medium | Medium | Medium | Lock in contracts early, including escalation clauses | Project Manager | Open |
| R-10 | Key staff unavailability or turnover | High | Medium | High | Crosstrain team members, maintain updated project documentation | Project Manager | Open |

Risk Scoring Legend

* **Impact:** Low / Medium / High
* **Likelihood:** Low / Medium / High
* **Priority:** Determined by combining impact and likelihood
* **Status:** Open / Monitoring / Mitigated / Closed

Review & Updates

* The Risk Register will be reviewed bi-weekly in project team meetings.
* Any new risks identified will be documented immediately.
* Status updates will be recorded, and mitigation actions tracked.