Bayfield County Jail/Courthouse Microgrid

PROJECT UPDATE AND HIGHLIGHTS

EIGP Docket 9709-FG-2020 Project Summary – Awarded April 1, 2021

Public Service Commission of Wisconsin
Office of Energy Innovation
Energy Innovation Grant Program
ATTACHMENT A - Application Cover Sheet

SECTION I - Provide information summarizing the project proposal.			
Project Title:	**Bayfield County Microgrid Project**		
PSC Grant Request ($):	**Applicant Cost Share ($):**	**Project Total ($):**	
273,714	**254,171**	**527,884**	
Choose one Eligible Activity			
☒ Renewable Energy & Energy Storage	☐ Energy Efficiency & Demand Response	☐ Electric & RNG Vehicles & Infrastructure	☐ Comprehensive Energy Planning

Highlights

First project to utilize Xcel Energy's Resiliency Services Pilot Tariff

- Now called Empower Resiliency

Master meter Jail and Courthouse

Install 125kW/110kWh BESS and create microgrid

Utilize an intelligent microgrid controller

- Real-time cloud based interface
- Machine learning capability (AI)
- Immediate peak control benefit and demonstration project with future energy markets in mind

Budgetary constraints reduced new solar from 23kW to 5kW

Project Timeline

January 2021 Application filed with EIGP

April 2021 EIGP Award

Summer 2021 NEPA Review

Sept. 2021 Contracts signed with PSC

Fall-Winter 2021 Final engineering design and coordination with Xcel

March 2022 RFP for installation contractor

April 2022 Contractor selected, BESS ordered

May 2022 Started Interconnection Application with Xcel

June 2022 Interconnection review by Xcel

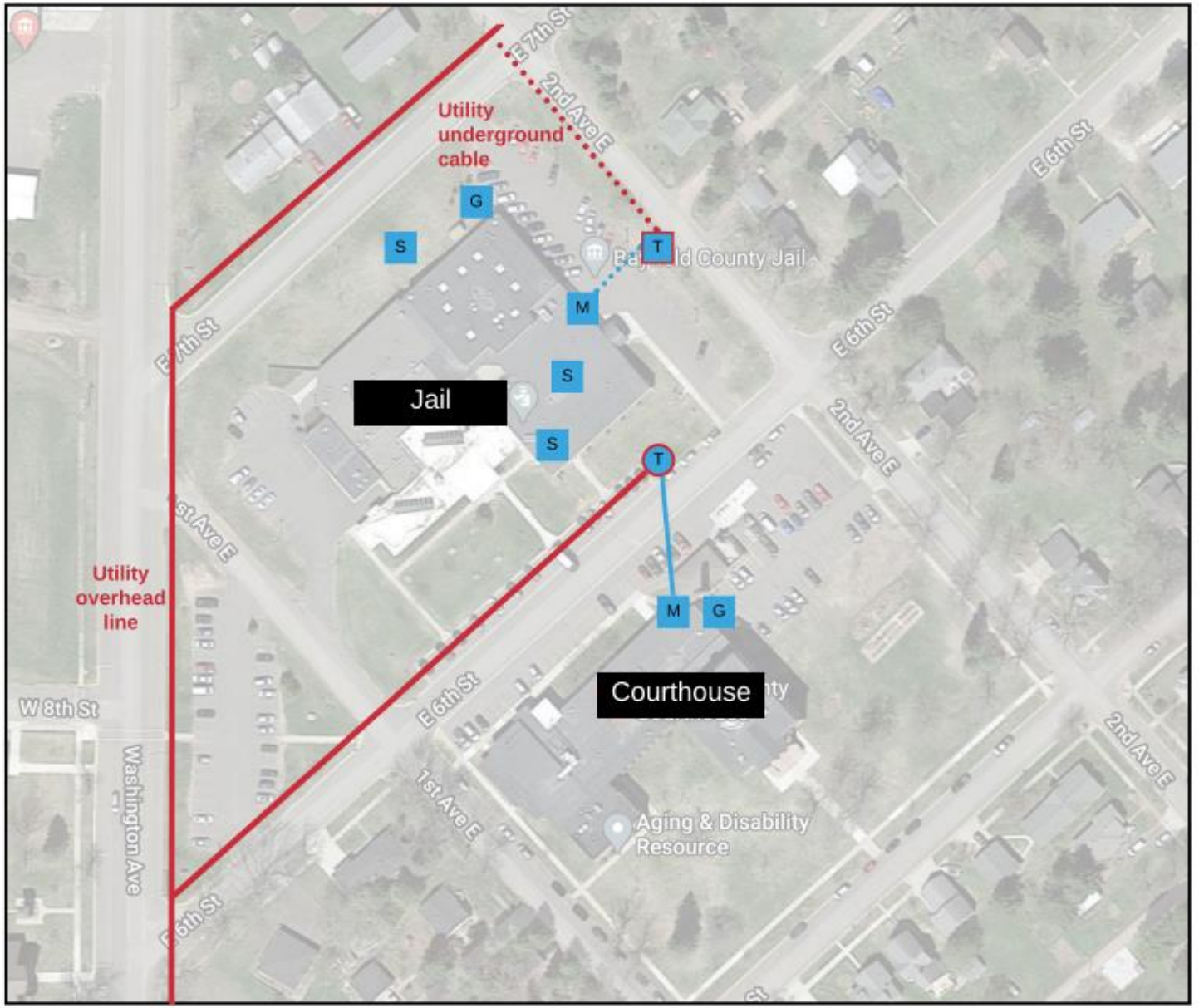
August 2022 Revised final engineering complete

Sept. 2022 Interconnection application complete

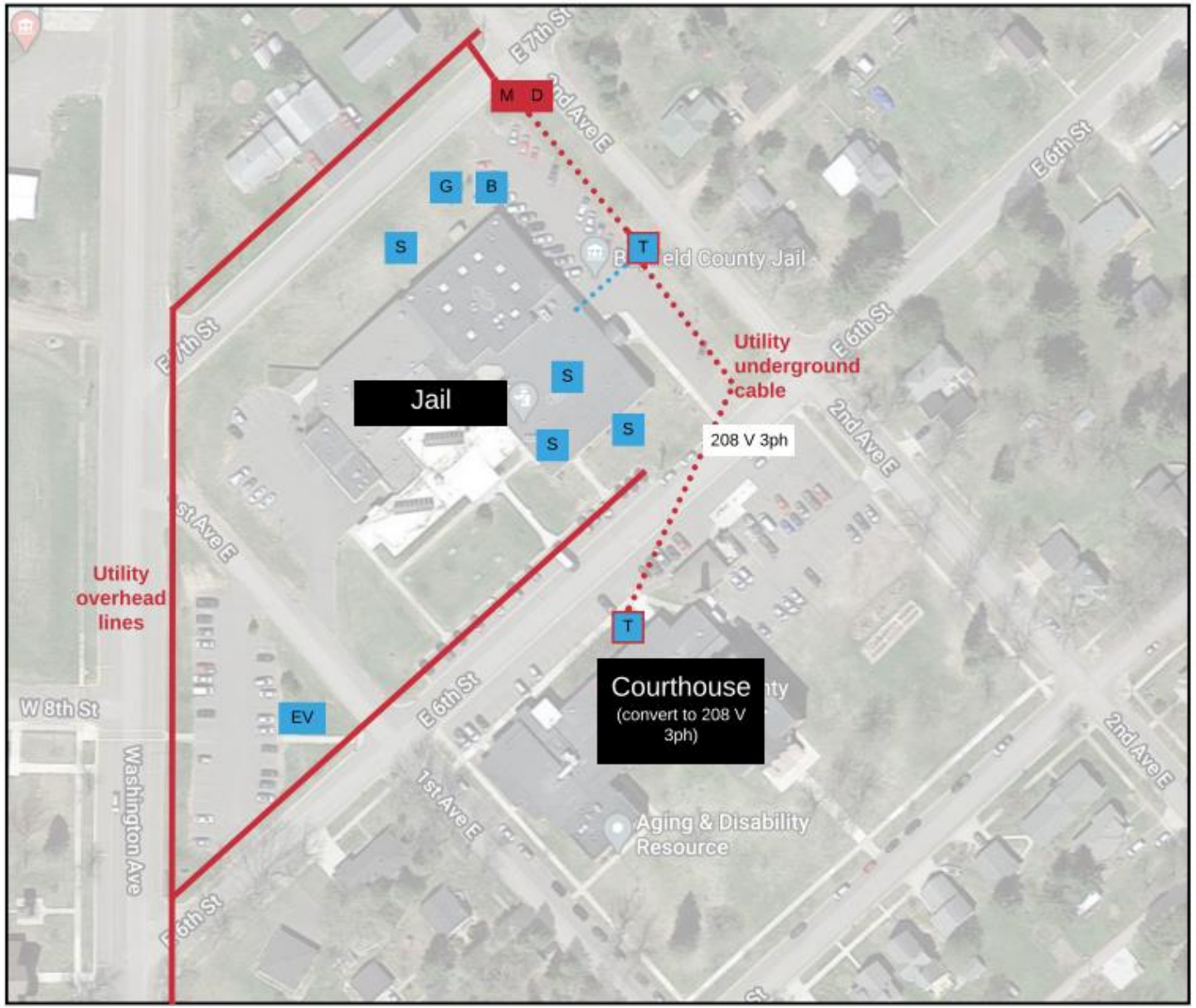
Sept. 2022 Start construction

Dec. 2022 Construction complete

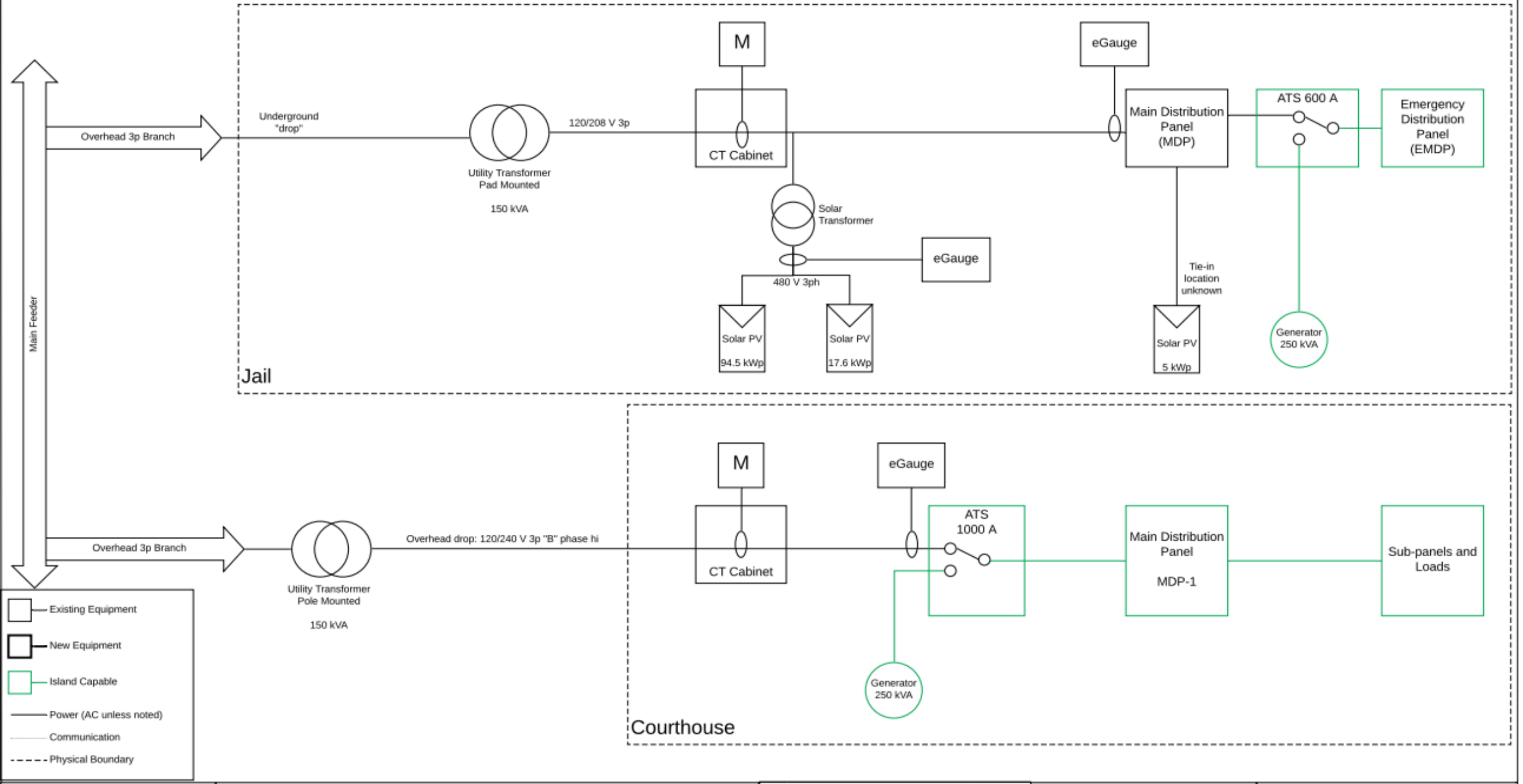
Site Schematic: Status Quo



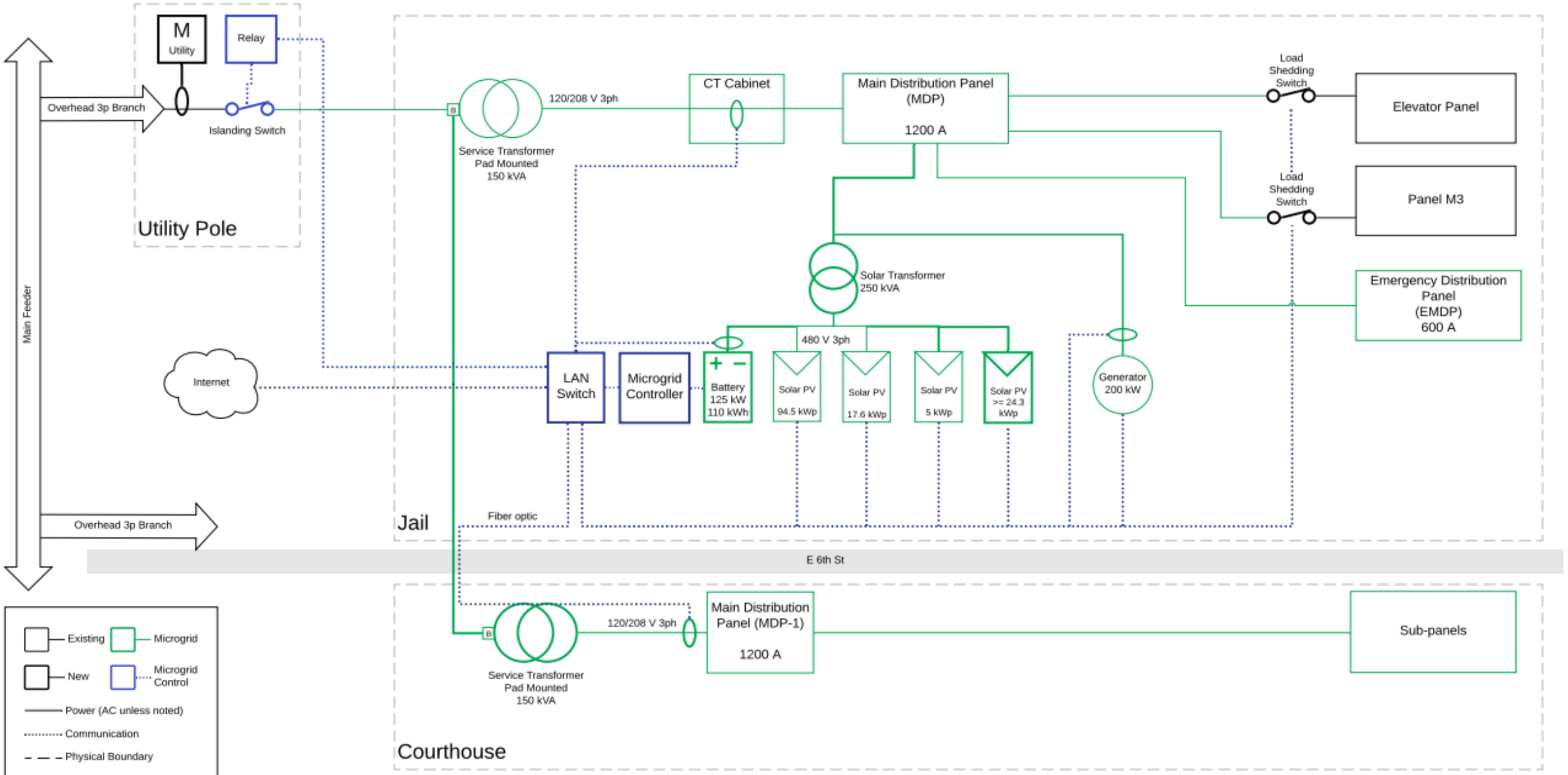
Site Schematic: Utility Interconnection



One-Line Diagram: Status Quo



One-Line Diagram: Microgrid



Summary of Microgrid Cost and Grant Funding

	Est April 2021	2022 Actual
Total Project Capital Cost	$500,139	$548,213
Total Project Grant Funding	$277,714	$281,714
Capital Cost to County	$222,425	$266,499
Annual Utility Bill Savings	$11,171	$14,742
Simple Payback (years)	6.5	7.2

1st Year Utility Bill Savings from Microgrid

Electricity Savings	2021 Estimate	2022 Estimate
Savings from Combining Meters	$1,466	$1500
Avoided Energy Charges	$2,199	$568
Expected Demand Charge Savings	$5,875	$4,711
Distribution Demand Charge Savings	$223	$618
Xcel Peak Control Program Savings	$0	$5,000
Heat Savings Solar Thermal Expected Savings	$1,407	$2,345
Total Year 1 Utility Bill Savings	$11,171	$14,742

Project changes:

Cost increases	Revenue increases
Inflation at 7%	Xcel tariff changes
Supply chain disruptions	Xcel Peak Control program
Xcel installation increase (5% in last 3 months)	Solar Thermal more valuable - Natural gas increase
Material costs are up (nickel 130%, copper 62%, etc.)	Focus on Energy grant increase

Reduced costs by:
Reducing new solar PV from original proposal (save for next phase)
Working closely with Jolma Electric to “Value Engineer”

Other sheets to view if desired

RE Historical Summary Spreadsheet

Energy Tracking Spreadsheet

Jail Utility Bill History and Analysis

BEC DG Rate Analysis (Model)

Washburn WWTP Energy Audit