Nuclear Powered DAC project in Illinois

FE0032156

Sean Tanton

Constellation

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National Energy Technology Laboratory
Carbon Management Project Review Meeting
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Project Overview

Funding:
$2.5 Million (DOE)
20% Cost Share

Project Performance Dates:
TBD – 18-month funding period starting from funding award

Project Participants (Responsibilities):
Constellation (Prime Awardee, Coordination, Host Site)
1PointFive / Carbon Engineering (DAC technology, Business Case Analysis)
Worley Group (Engineering company, engineering design, cost estimation)
PNNL (Life Cycle Analysis, EH&S Risk Assessment, Business Case Analysis)
UIUC (Workforce Readiness Plan, EH&S Risk Assessment, EJ Analysis, Economic Revitalization and Job Creation Outcomes Analysis)

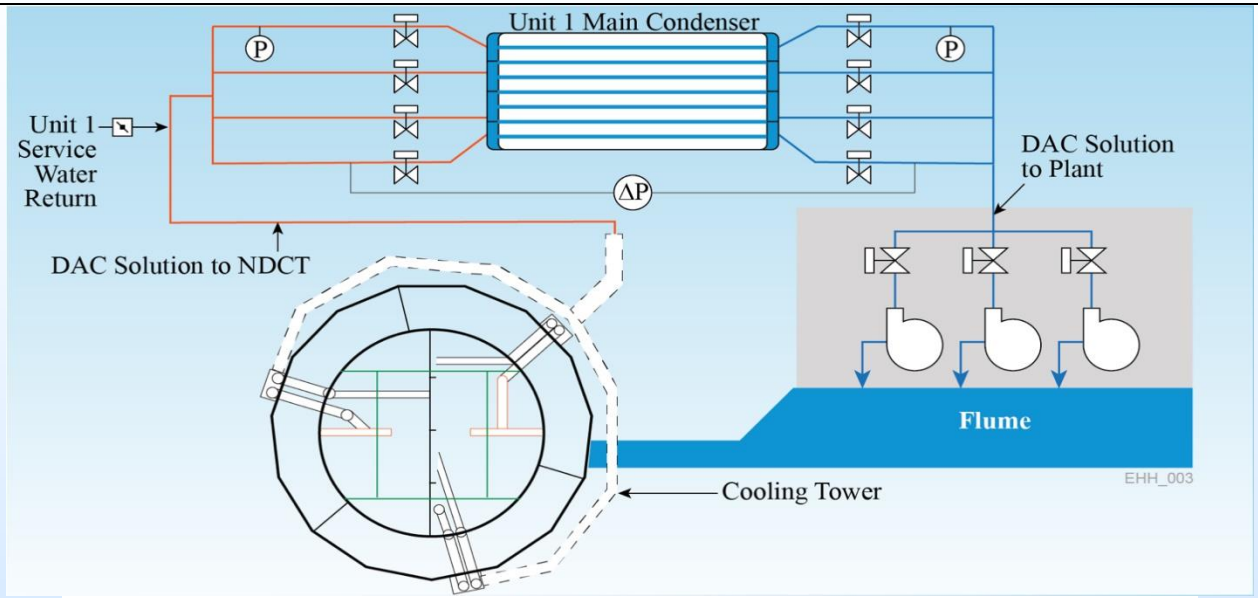
Project Overview, continued

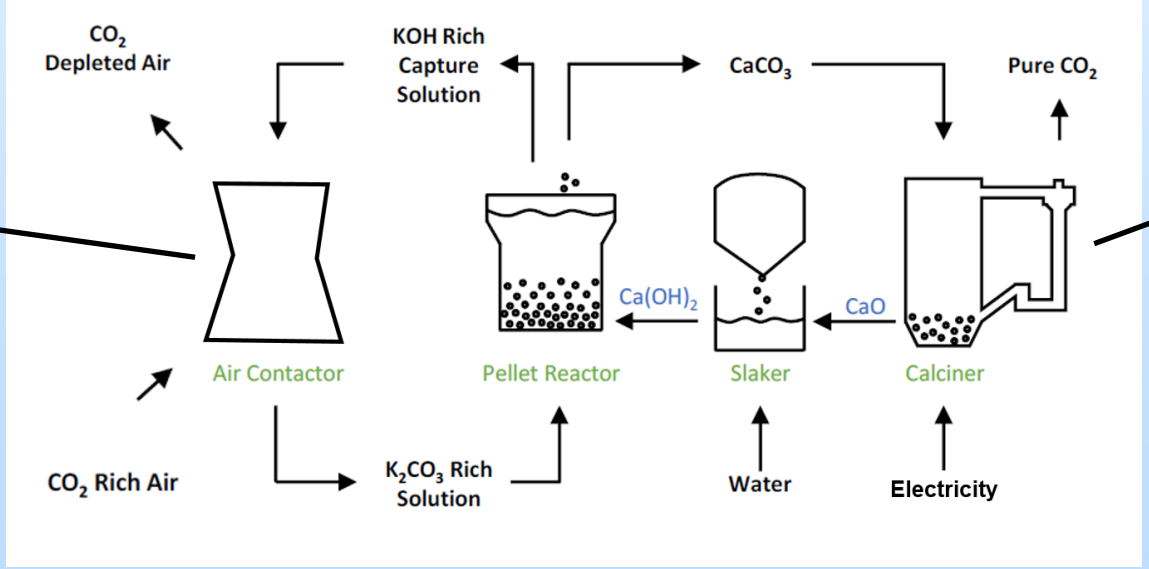
Project Objective:

Perform a FEED for a nuclear-powered DAC facility utilizing the cooling towers at the Constellation Byron Generating Station as air contactors.

www.constellationenergy.com

Technology Background





Alkali Capture Loop

Calcium Loop

Technology Background, continued

Site:
Constellation Byron Generating Station

Technology Supplier:
- 1PointFive (U.S. Licensee to Carbon Engineering)
- Project design will be closely related to the design of the DAC 1 facility in the Permian Basin

Estimated Capacity:
250,000 tCO_2/year

Project Advantages:
- Powered by carbon free energy
- Existing cooling towers to be used as air contactors
- Heat from the nuclear plant will be used to increase the kinetics of the process

Project Scope

Project Schedule

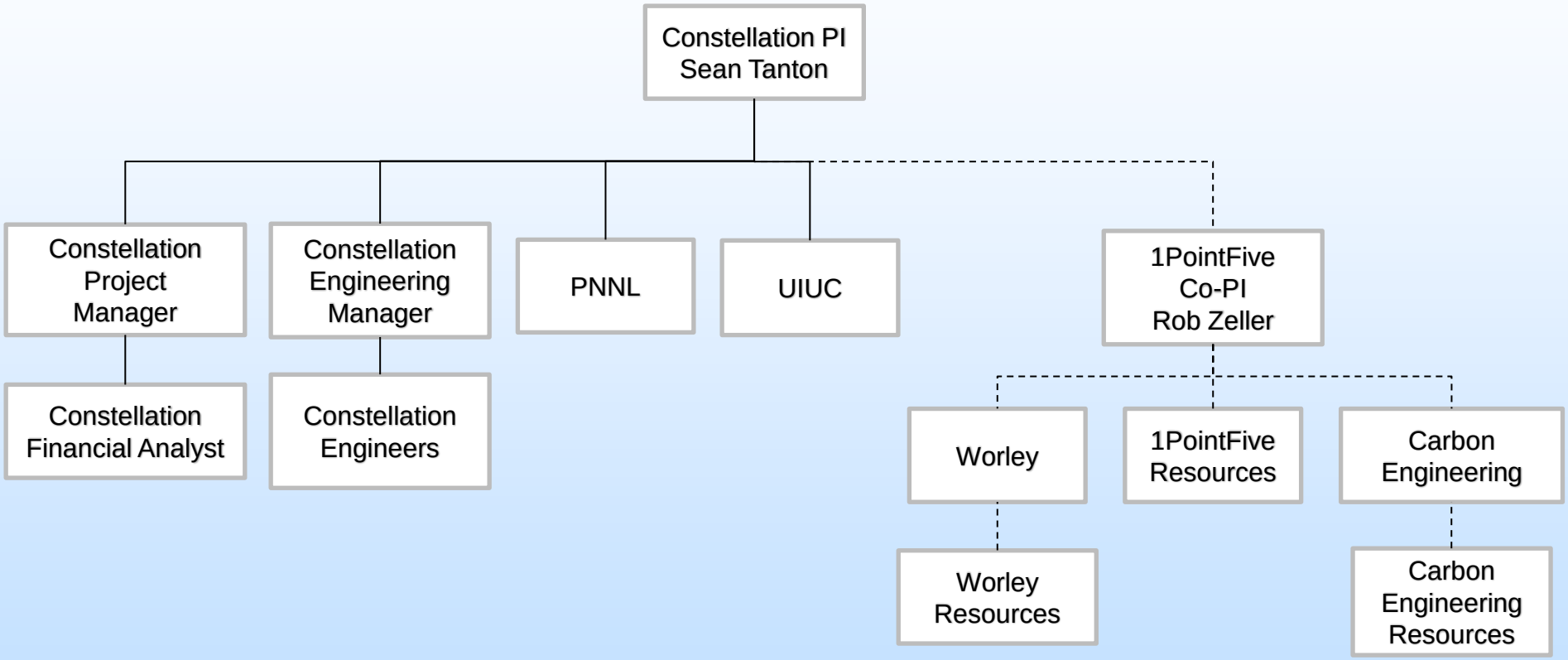
Project Management Plan	Award + 30 days
Technology Maturation Plan	Award + 90 days
Workforce Readiness Plan for Technology Development	Award + 12 months
Project Design Basis	Award + 2 month
Engineering Design Package	Award + 4 months
Project Cost Estimate	Award + 6 months
Business Case Analysis	Award + 14 months
Technology EH&S Risk Assessment	Award + 14 months
Environmental Justice Analysis	Award + 14 months
Economic Revitalization and Job Creation Outcomes Analysis	Award + 14 months
Life Cycle Analysis	Award + 14 months

Summary

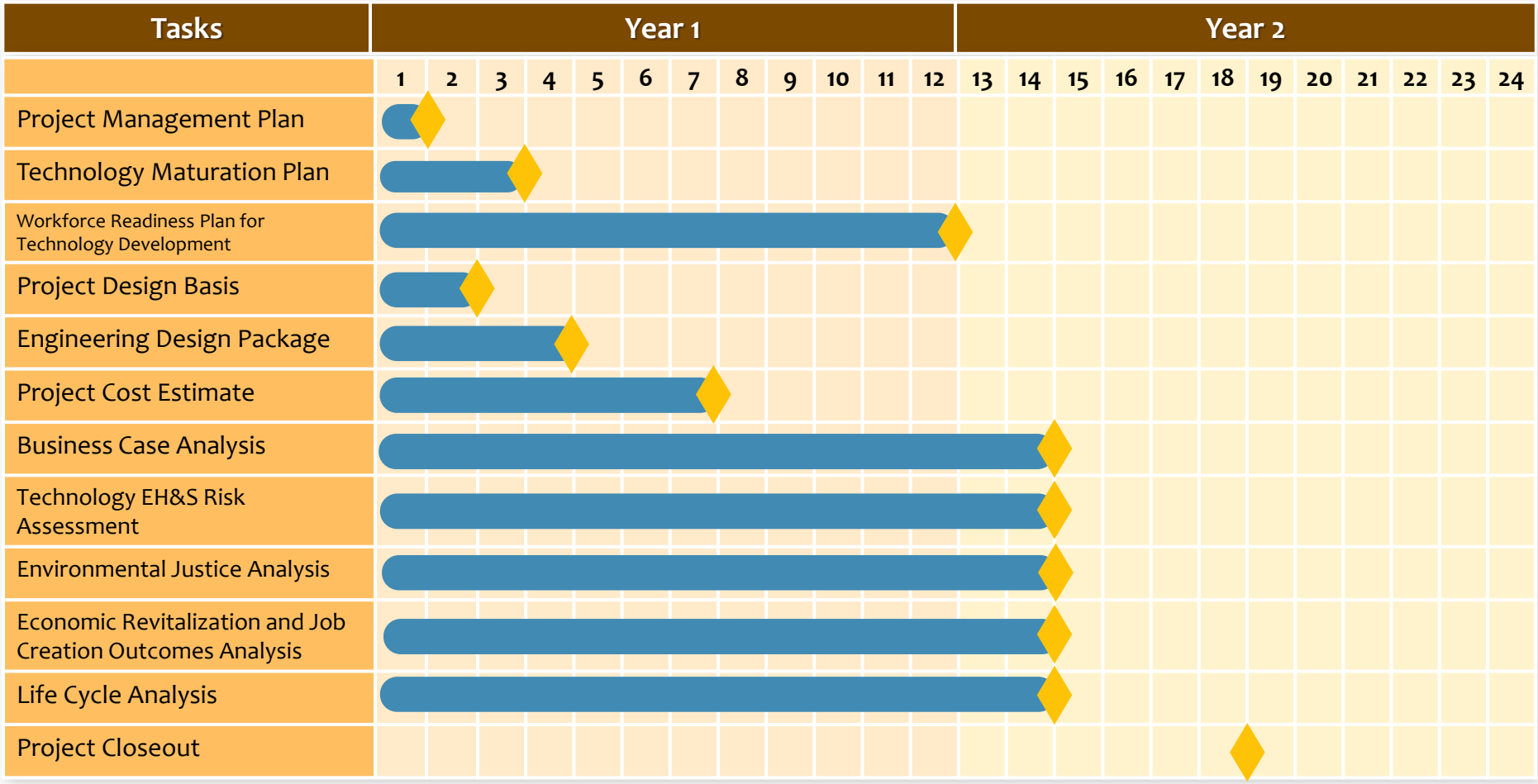
- $2.5 Million DOE Funding, 20% Cost Share
- 18-month budget period
- Develop FEED
  - Constellation Byron Nuclear Generating Station
  - Carbon Engineering DAC Technology (liquid sorbent)
  - 250,000 tCO_2/year

Appendix

Organization Chart



Gantt Chart


Tasks
Year 1
Year 2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Project Management Plan
Technology Maturation Plan
Workforce Readiness Plan for Technology Development
Project Design Basis
Engineering Design Package
Project Cost Estimate
Business Case Analysis
Technology EH&S Risk Assessment
Environmental Justice Analysis
Economic Revitalization and Job Creation Outcomes Analysis
Life Cycle Analysis
Project Closeout