Foreword (1 of 2)

From 2022 to 2024 a coalition of stakeholders in the Village of Questa, NM partnered with the U.S. Department of Energy's Communities Local Energy Action Program (LEAP) to explore options to develop electrolytic hydrogen production facilities to create jobs, provide clean energy, and utilize former mine resources. In the project's first phase, the National Renewable Energy Laboratory (NREL) provided technical assistance to assess the economic feasibility of constructing solar PV-powered hydrogen facilities at Chevron's former molybdenum mine site and tailing facility, including a grid-tied hydrogen energy storage facility (Topolski et al. 2023). This economic impact assessment report extends the grid-tied energy storage application findings of the original feasibility study to estimate potential impacts on jobs, earnings, and tax revenues. The findings of the previous study and this report are intended to inform the Village of Questa and broader Taos County communities of possible scope, costs, benefits, risks, and next steps of electrolytic hydrogen development, recognizing that the assessment is necessarily incomplete and uncertain given the commercial novelty of clean hydrogen technologies.

This economic impact assessment report relies on the technoeconomic financial analysis conducted in the first phase of the project (Topolski et al. 2023), and on an input-output model applied to the economy of Questa and the surrounding area, the rest of Taos County and the state of New Mexico. Key assumptions used in the first phase financial analysis include estimates of 2027 electrolyzer and fuel cell costs based on global deployment projections; Kit Carson Electric Cooperative (KCEC) service territory projected net load, PV capacity, and storage capacity for 2027; 2021 solar PV generation profiles; a heuristic dispatch strategy for local solar, battery energy storage, and hydrogen energy storage; and ability to claim the full value of Inflation Reduction Act incentives. The economic impact assessment relies on data describing economy-wide linkages and spending patterns in New Mexico in 2019 as well as input data sourced from Questa Communities LEAP coalition members and average national workforce characteristics. This study does not address, e.g., a full range of possible costs for early-stage commercial polymer electrolyte membrane (PEM) electrolysers, PEM fuel cells, and hydrogen storage; implications of multiple weather years for system sizing and operations; quantification of resiliency benefits; a full accounting of water use; water sourcing; project financing and incentives; cost recovery and ratepayer impacts; changes in economic structure post-COVID-19; potential increased demand on public services (safety, roads, water treatment, housing, schools, etc.); environmental impacts; cultural impacts; asset ownership; distribution of benefits; or workforce training needs.

This work was authored by the National Renewable Energy Laboratory, operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08GO28308. Funding provided by the U.S. Department of Energy's Communities Local Energy Action Program (LEAP) Pilot. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government. The U.S. Government retains and the publisher, by accepting the article for publication, acknowledges that the U.S. Government retains a nonexclusive, paid-up, irrevocable, worldwide license to publish or reproduce the published form of this work, or allow others to do so, for U.S. Government purposes.
Foreword (2 of 2)

Given the uncertainty of some study inputs, as well as the many aspects of procuring, constructing, and operating a hydrogen energy storage facility not addressed in this study, this report is intended for discussion purposes only and should not be the sole basis of future design or investment decisions. It should not be used to estimate or extrapolate the impact of hydrogen projects of different scales and use cases. The purpose of this report and the overall study is to provide information to the Questa Community Coalition and surrounding community members. The authors, NREL, U.S. Department of Energy, and Communities Local Energy Action Program (LEAP) are not recommending any specific course of action.

Development of any kind comes with tradeoffs that must be considered by community leaders and residents. Choosing a specific economic development path can impact or present tradeoffs between land use, water use, allocation of public services, and the job functions of community members. For the community to determine if hydrogen is a good fit for Questa, they could pursue additional activities such as: assessment of other technology options to provide clean electricity; assessment of other economic development opportunities; hydrogen workforce gap analysis; third-party validation, cost-benefit analysis, and safety design of hydrogen facilities described in this study or otherwise under consideration; ensure leaders are providing continuous, transparent and meaningful outreach and engagement; develop community benefit agreements and workforce development programs.

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Contents

➤ Project Background

➤ Economic Impacts Analysis
  ➤ Methodology
  ➤ Data and Assumptions
  ➤ Results and Conclusions

➤ Project Conclusions

➤ References
Project Background
Overview and Introduction: Why Hydrogen? And How Did We Get Here?

Kit Carson Electric Cooperative (KCEC) has been exploring alternatives to meet its membership-driven 100% renewable energy goals in advance of the New Mexico legal mandate for rural co-ops to transition to carbon-free electricity by 2050. Questa Community Coalition members see potential economic development and brownfield reuse benefits of clean hydrogen production in Questa.

- The Communities Local Energy Action Program (LEAP) facilitates community-wide economic empowerment, local environmental improvements, and other benefits through clean energy deployment in communities that are low-income, energy-burdened, experiencing environmental justice impacts, or experiencing a shift away from economic reliance on fossil fuels.
- This coalition applied for a Communities LEAP technical assistance grant to study the feasibility and potential impacts of clean hydrogen development in Questa.
- Questa is one of the 24 communities selected for the Communities LEAP Pilot.
What?
- Study whether it would be beneficial to reuse mine and local resources (i.e., land, water) to produce electrolytic hydrogen.

Why?
- Deliver clean, reliable electricity during non-solar and other hard-to-serve times (KCEC)
- Create jobs in Questa (Village of Questa, Chevron)
- Attract more economic activity (Village of Questa, Chevron)
- Increase tax base (Village of Questa)
- Put existing assets to beneficial use (Chevron)
- Maintain affordable energy bills during the transition to clean electricity (KCEC, Village of Questa)
- Support corporate carbon-reduction goals (Chevron)
- Be a replicable model for other rural and Tribal communities (KCEC, Village of Questa).
Previous Work: Economic Feasibility

Facility A: Grid-Connected Energy Storage*

- Facility A is to store and supply excess solar power for KCEC
- 7.5 MW discharge capacity and 36-hr storage duration
- Estimated levelized cost of electricity = $0.45/kWh of round-tripped electricity (with incentives).

Facility B: Heavy-Duty Vehicle Fueling

- Facility B is to support Chevron heavy-duty fuel cell vehicle refueling.
- Annual capacity of 157 tons/yr of on-demand 700-bar hydrogen gas for heavy-duty fuel cell vehicle refueling.
- Levelized cost of hydrogen = $6.06/kg of 700 bar hydrogen ($4.86/gal diesel equiv., with incentives).

*This presentation focuses on the economic impacts of Facility A only. Details for Facilities A and B are available in https://www.nrel.gov/docs/fy23osti/86665.pdf.
Previous Work: Facility A Techno-Economic Impact Summary*

- Equipment configuration and size:
  - 32-MW polymer electrolyte membrane (PEM) electrolyzer
  - 14 metric ton compressed hydrogen gas storage (36 hours of fuel cell operation)
  - 7.5-MW PEM fuel cell
  - 15-MW solar photovoltaic (PV) array.

- Results:
  - $44.5 MM overnight capital cost without incentives
  - $0.45/kWh of round-tripped electricity with incentives.

- Assumptions:
  - Projected 2027 technology costs
  - $3/kg Hydrogen Production Tax Credits from the Inflation Reduction Act for electrolyzer, rectifier
  - 40% Inflation Reduction Act Investment Tax Credit for hydrogen storage, fuel cell, inverter.

- Limitations:
  - Simple power dispatch strategy for KCEC’s local PV, batteries, and hydrogen storage assets, assuming 2021 weather
  - Does not assess tax credit qualification given U.S. Department of Treasury proposed rulemaking (Federal Register 2023).

*Results from https://www.nrel.gov/docs/fy23osti/86665.pdf
Economic Impact Assessment Results
Overview: Economic Impact Analysis

Temporary Effects

Hydrogen Facility Construction

Example electrolyzer.
Photo by John De La Rosa, NREL 34729

Solar Plant Construction

Solar PV construction jobs
Photo by Dennis Schroeder, NREL 40822

Permanent Effects

Hydrogen Facility Operation and Maintenance (O&M)

Example above-ground hydrogen storage
Photo by Werner Slocum, NREL 72174

Solar Plant O&M

Solar PV maintenance jobs
Photo by Dennis Schroeder, NREL 46281

Impacts on Jobs, Earnings, Taxes

Taos County and Village of Questa area boundaries (in blue).
Image by Francisco-Solis and Atom. Data from U.S. Census Bureau

Legend
- Questa Area
- Rest of Taos County

Village of Questa
**Questa Economic Impact Assessment Approach**

- **Goal:** Estimate potential local (Village of Questa), regional (Taos County), and state (New Mexico) economic effects of constructing and operating a new hydrogen facility and solar plant in Questa, NM.

- **Method:** Input-Output Analysis is a commonly used framework for estimating economic impacts from a change in demand in a region.

- **Main data sources:**
  - Economic IMpact Analysis for PLANning (IMPLAN; IMPLAN 2023): 2019 input-output tables for New Mexico counties:
    - **NREL:** hydrogen facility construction and operation cost data, solar facility operation cost data.
    - **Kit Carson:** solar facility construction cost data (Topolski et al. 2023).
Methodology
Input-Output Analysis

The accounting system underlying input-output analyses describes the structure of the economy as a network of sectors that sell to one another, to local households and governments, and to external markets.

This analysis estimates impacts on all sectors in the region, as it considers all supply chains simultaneously.

IMPLAN* provides the input-output data used in this analysis.

*See https://implan.com/.
Example of Multiplier Effect

**INDUSTRIAL OUTPUT**
- **Direct** $1,000k
- **Indirect** $194k
- **Induced** $486k
- **Total** $1,680k

**Output multiplier:** 1.6 $/$ inv.

**JOBS**
- **Direct** 2.1
- **Indirect** 0.5
- **Induced** 2.51
- **Total** 5.58

**Jobs multiplier:** 5.6 jobs/$MM inv.
Economic Impact Analysis Methodology

Input-Output Model

Allocated Project Cost Data

Regional Purchase Coefficients

How much is locally supplied?

Local Purchases

Non-Local Purchases

Economic Leakage

Demand for construction materials

Direct Effect

Total investment

Multiplier Effects

Temporary Effects

Construction

- Jobs.
- Earnings.
- Sectoral output.
- Value added.

Permanent Effects

Operation and Maintenance (O&M)

- Jobs.
- Earnings.
- Sectoral output.
- Value added.

Indirect Effect

Supply chains

Induced Effect

Labor expenditures

Interindustry interactions

Buy/sell goods

Labor

Expenditures

Expenditures

Labor income spending
Economic Metrics Definitions

- **Jobs**: Sum of full-time equivalent (FTE = 2,080 hr/yr) workers employed at the place of business. All jobs *supported* by local companies are accounted for, including those of out-of-state commuters (who might spend part of their wages outside the state). Includes salary and wage employees + proprietors (business owners, partners, and tax-exempt cooperative members).

- **Value added**: Represents the wealth generated by an economic activity and includes compensation of employees (wages and benefits), profit-type income, property income, and taxes on production.

- **Earnings**: The portion of the value added that represents pre-tax total compensation of employees (wages and benefits) and proprietor income (income of sole proprietorships, partnerships, and tax-exempt cooperatives).

- **Tax revenue**: Represents local, county, and federal taxes collected throughout the production process.
Data and Assumptions
Assumptions

Economic Area: “Questa Area” comprises 5 ZIP codes (87512, 87519, 87524, 87556, 87564).

- **IMPLAN data** were adjusted to better reflect current conditions expressed by the coalition members.

- **Cost allocation** is primarily based on IMPLAN’s regional purchase coefficients (i.e., % of local purchases by sector), information from the coalition, and availability of suppliers in NM. Our Mid scenario assumptions for suppliers are:
  - The electrolyzer and stationary fuel cells are supplied by NM companies located outside Taos County. Solar modules are imported from outside the United States.
  - Engineering services come from the rest of Taos County and the rest of New Mexico, and building permits go through Taos County.

- **Additional scenarios** were developed to explore sensitivities in which suppliers are more or less local than in our Mid scenario.
### Three Scenarios’ Specifications

<table>
<thead>
<tr>
<th>Hydrogen Facility</th>
<th>Least Local Scenario</th>
<th>Mid Scenario</th>
<th>Most Local Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrolyzer</td>
<td>Outside NM</td>
<td>NM</td>
<td>NM</td>
</tr>
<tr>
<td>Stationary fuel cells</td>
<td>Outside NM</td>
<td>NM</td>
<td>NM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solar Facility</th>
<th>Least Local Scenario</th>
<th>Mid Scenario</th>
<th>Most Local Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules</td>
<td>Outside NM</td>
<td>Outside NM</td>
<td>NM</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>Outside NM</td>
<td>NM</td>
<td>NM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services</th>
<th>Least Local Scenario</th>
<th>Mid Scenario</th>
<th>Most Local Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Rest of Taos County</td>
<td>Rest of Taos/Questa</td>
<td>Questa area</td>
</tr>
<tr>
<td>Engineering</td>
<td>Outside NM</td>
<td>NM/Rest of Taos</td>
<td>Rest of Taos County</td>
</tr>
<tr>
<td>Transportation</td>
<td>Outside NM</td>
<td>NM/Rest of Taos/Questa</td>
<td>Questa area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>O&amp;M</th>
<th>Least Local Scenario</th>
<th>Mid Scenario</th>
<th>Most Local Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Rest of Taos County</td>
<td>Questa area</td>
<td>Questa area</td>
</tr>
<tr>
<td>Parts/services</td>
<td>Outside NM</td>
<td>NM</td>
<td>NM</td>
</tr>
</tbody>
</table>

**Construction phase:**
- Only construction impacts in NM.
- Workers come from outside Questa.
- Uses currently available information about suppliers + average regional purchase coefficients.
- Labor breakdown between Questa/Taos.
- All equipment, materials, and services are sourced from NM.
- Most of the labor comes from Questa.
Cost Assumptions

Hydrogen Facility A: Grid-Tied

- **Location**: Chevron tailing facility under consideration.

- **Equipment configuration and size**:
  - 32-MW PEM electrolyzer
  - 14-ton compressed hydrogen gas storage
  - 7.5-MW PEM fuel cell.

- **Cost Data**: NREL (Facility A case study) (Topolski et al. 2023).

Solar Facility

- **Location**: Chevron tailing facility under consideration.

- **Equipment configuration and size**:
  - 15 MW
  - Single-axis tracking system
  - Total area ~120 acres.

- **Cost Data**: Based on Kit Carson Taos-Mesa Solar Facility (15 MW) and Jobs and Economic Development Impacts (JEDI) PV Model (rel. PV05.20.21) (NREL 2021).
Hydrogen Facility A: Grid-tied Solar Facility

Location of suppliers as a % of total costs

<table>
<thead>
<tr>
<th>Source of materials and services</th>
<th>Least Local</th>
<th>Mid</th>
<th>Most Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>0%</td>
<td>0.4%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Rest of Taos County</td>
<td>21.8%</td>
<td>25.2%</td>
<td>19.8%</td>
</tr>
<tr>
<td>Rest of NM</td>
<td>0%</td>
<td>50.4%</td>
<td>70%</td>
</tr>
<tr>
<td>Rest of U.S./Imported</td>
<td>78.2%</td>
<td>24%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source of materials and services

<table>
<thead>
<tr>
<th>Source of materials and services</th>
<th>Least Local</th>
<th>Mid</th>
<th>Most Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>0%</td>
<td>5.7%</td>
<td>27.2%</td>
</tr>
<tr>
<td>Rest of Taos County</td>
<td>20.5%</td>
<td>37.3%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Rest of NM</td>
<td>0%</td>
<td>18%</td>
<td>37.6%</td>
</tr>
<tr>
<td>Rest of U.S./Imported</td>
<td>79.5%</td>
<td>39%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Results and Conclusions
### Overview of Results: Hydrogen and Solar Facilities (Mid Scenario)

#### Jobs (FTE) | Earnings (Thousand $) | Tax Revenue (Thousand $)
---|---|---
**Construction** (Temporary Impacts)
Questa | 11 | $600 | $800
Taos County | 235 | $9,300 | $900
New Mexico | 164 | $10,700 | $4,600
**Total** | 410 | $20,600 | $6,300

#### O&M (Annual Impacts)
Questa | 11 | $1,100 | $214
Taos County | 5 | $200 | $570
New Mexico | 4 | $300 | $400
**Total** | 20 | $1,600 | $1,220

*Note: Monetary values are in 2020 dollars. Numbers may not add up due to rounding.*

*(Earnings include both wages/salaries and benefits as well as proprietor income.)*
## Top Occupations Directly Supported during Construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
<th>Education</th>
<th>Training</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-3032</td>
<td>Heavy and tractor-trailer truck drivers</td>
<td>14</td>
<td>High school</td>
<td>1-3 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>51-2028</td>
<td>Electrical, electronic, and electromechanical assemblersb</td>
<td>7</td>
<td>High school</td>
<td>3-6 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>47-2061</td>
<td>Construction laborers</td>
<td>6</td>
<td>High school</td>
<td>3-6 mo</td>
<td>1-3 mo</td>
</tr>
<tr>
<td>43-9061</td>
<td>Office clerks, general</td>
<td>5</td>
<td>Some college</td>
<td>1-3 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>47-2031</td>
<td>Carpenters</td>
<td>4</td>
<td>High school</td>
<td>1-2 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>53-7062</td>
<td>Laborers and freight, stock, and material movers, hand</td>
<td>4</td>
<td>High school</td>
<td>&lt;1 mo</td>
<td>&lt;1 mo</td>
</tr>
<tr>
<td>47-2111</td>
<td>Electricians</td>
<td>4</td>
<td>High school +c</td>
<td>2-4 yr</td>
<td>4-6 yr</td>
</tr>
<tr>
<td>11-1021</td>
<td>General and operations managers</td>
<td>3</td>
<td>Associate’s degree</td>
<td>3-6 mo</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>47-1011</td>
<td>First-line supervisors of construction trades and extraction workers</td>
<td>3</td>
<td>High school +</td>
<td>6 mo-1 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td></td>
<td>Proprietors (construction, transportation general, and subcontractors)d</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* a commercial driver’s license (CDL) truck driver job requires a CDL.

* Except coil winders, tapers, and finishers.

* High school+: Post-secondary certificate.

*Proprietors’ jobs are mainly composed of independent contractors (owner-operators) in construction and transportation (e.g., truck drivers who own their own trucks, a carpenter that owns his own company and is the sole employee, etc.).

### Distribution of Jobs Supported by Industry

- Transportation
- Construction
- Professional Services
- Other Services
- Other Sectors

**Workforce Profile Data: 2019 Occupation Dataset from IMPLAN**
Overview of Results: Hydrogen and Solar Facilities

**Construction** (Temporary Impacts)

**O&M** (Annual Impacts)
### Detailed Results: Questa Area (Mid Scenario)

#### Top Occupations Supported during Construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
<th>Education</th>
<th>Training</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-3032</td>
<td>Heavy and tractor-trailer truck drivers</td>
<td>2.0</td>
<td>High school</td>
<td>1-3 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>53-7062</td>
<td>Laborers and freight, stock, and material movers</td>
<td>0.3</td>
<td>High school</td>
<td>&lt;1 mo</td>
<td>&lt;1 mo</td>
</tr>
<tr>
<td>43-9061</td>
<td>Office clerks, general</td>
<td>0.2</td>
<td>Some college</td>
<td>1-3 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>47-2061</td>
<td>Construction laborers</td>
<td>0.1</td>
<td>High school</td>
<td>3-6 mo</td>
<td>1-3 mo</td>
</tr>
<tr>
<td>49-3031</td>
<td>Bus and truck mechanics and diesel engine specialists</td>
<td>0.1</td>
<td>High school</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>53-3033</td>
<td>Light truck drivers</td>
<td>0.1</td>
<td>High school</td>
<td>&lt;1 mo</td>
<td>1-3 mo</td>
</tr>
<tr>
<td>47-2031</td>
<td>Carpenters</td>
<td>0.1</td>
<td>High school</td>
<td>1-2 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>53-1047</td>
<td>First-line supervisors of transportation and material-moving workers</td>
<td>0.1</td>
<td>High school</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>11-1021</td>
<td>General and operations managers</td>
<td>0.1</td>
<td>Associate's degree</td>
<td>3-6 mo</td>
<td>2-4 yr</td>
</tr>
<tr>
<td><strong>Proprietors (construction, transportation general, and subcontractors)</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a CDL truck driver job requires a CDL.

<sup>b</sup>Proprietors’ jobs are mainly composed of independent contractors (owner-operators) in construction and transportation (e.g., truck drivers who own their own trucks, a carpenter that owns his own company and is the sole employee, etc.).

SOC = Standard Occupation Classification

---

**Distribution of Jobs Supported by Industry**

- **Transportation**
- **Construction**
- **Professional Services**
- **Wholesale/Retail**
- **Other Sectors**

**Workforce Profile Data:** 2019 Occupation Dataset from IMPLAN
### Detailed Results: Questa Area (Mid Scenario)

#### Top Occupations Supported Annually during Operation

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
<th>Education</th>
<th>Training</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-8091</td>
<td>Chemical plant and system operators</td>
<td>4</td>
<td>High school</td>
<td>6 mo-1 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>51-1011</td>
<td>First-line supervisors of production and operating workers&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2</td>
<td>High school +&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3-6 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>11-3051</td>
<td>Industrial production managers</td>
<td>1</td>
<td>Associate’s degree</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>49-1011</td>
<td>First-line supervisors of mechanics, installers, and repairers&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1</td>
<td>High school +</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>49-9041</td>
<td>Industrial machinery mechanics</td>
<td>1</td>
<td>High school +</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>43-9061</td>
<td>Office clerks, general</td>
<td>1</td>
<td>Some college</td>
<td>1-3 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>49-2095</td>
<td>Electrical and electronics repairers, powerhouse, substation, and relay</td>
<td>0.5</td>
<td>High school +</td>
<td>2-4 yr</td>
<td>2-4 yr</td>
</tr>
</tbody>
</table>

<sup>a</sup>High school+: Post-secondary certificate.

<sup>b</sup>Supervisors also act as safety officers.

---

### Distribution of Jobs Supported by Industry

- **Hydrogen Facility**
- **Solar Facility**

*Workforce Profile Data: 2019 Occupation Dataset from IMPLAN*
Occupation Results: Rest of Taos County (Mid Scenario)

Construction and Installation Phase (Temporary Jobs)
Top five major occupation groups supported during construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-0000</td>
<td>Construction and extraction occupations</td>
<td>31</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>18</td>
</tr>
<tr>
<td>17-0000</td>
<td>Architecture and engineering occupations</td>
<td>9</td>
</tr>
<tr>
<td>33-0000</td>
<td>Protective service occupations</td>
<td>9</td>
</tr>
<tr>
<td>53-0000</td>
<td>Transportation and material-moving occupations</td>
<td>9</td>
</tr>
</tbody>
</table>

O&M Phase (Permanent Jobs)
Top four major occupation groups supported annually

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-0000</td>
<td>Food preparation and serving-related occupations</td>
<td>0.6</td>
</tr>
<tr>
<td>41-0000</td>
<td>Sales and related occupations</td>
<td>0.4</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>0.4</td>
</tr>
<tr>
<td>49-0000</td>
<td>Installation, maintenance, and repair occupations</td>
<td>0.3</td>
</tr>
</tbody>
</table>
**Occupation Results: Rest of New Mexico (Mid Scenario)**

### Construction and Installation Phase (Temporary Jobs)

**Top five major occupation groups supported during construction**

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>53-0000</td>
<td>Transportation and material-moving occupations</td>
<td>23</td>
</tr>
<tr>
<td>51-0000</td>
<td>Production occupations</td>
<td>22</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>17</td>
</tr>
<tr>
<td>41-0000</td>
<td>Sales and related occupations</td>
<td>10</td>
</tr>
<tr>
<td>11-0000</td>
<td>Management occupations</td>
<td>8</td>
</tr>
</tbody>
</table>

### O&M Phase (Permanent Jobs)

**Top four major occupation groups supported annually**

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-0000</td>
<td>Installation, maintenance, and repair occupations</td>
<td>0.7</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>0.3</td>
</tr>
<tr>
<td>41-0000</td>
<td>Sales and related occupations</td>
<td>0.2</td>
</tr>
<tr>
<td>51-0000</td>
<td>Production occupations</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Workforce Profile**

**EDUCATION REQUIREMENTS**

- Low: 52%
- Medium: 25%
- High: 23%

**PRIOR WORK EXPERIENCE**

- None: 8%
- Less than 1 yr: 21%
- 1-2 years: 18%
- 2-6 years: 27%
- More than 6 yrs: 26%

Low: High school diploma or less  
Medium: Associate’s degree or less  
High: Bachelor’s degree or above
Conclusions

- Most economic benefits for Questa, especially tax revenue and jobs, occur during construction: we estimate that 11 jobs will be supported in the Village of Questa mainly from construction and transportation services, with the village expected to collect $0.8 million in tax revenues.
  
  - Temporary jobs supported during construction primarily include truck drivers, material movers, and construction-related (laborers, carpenters, electricians) occupations.

- During operation, the village will benefit the most in the long term if the new facilities’ permanent workers reside in Questa (~11 workers/yr). The village is expected to collect $0.21 million in tax revenues per year, mainly from property taxes for the facilities.
  
  - Permanent jobs supported during operation primarily include plant operators, supervisors, and electrical maintenance.

- As shown in the sensitivity scenarios (Most Local/Least Local), impacts vary significantly depending on which businesses supply materials, equipment, and services, and where workers reside. Choosing local suppliers would provide more benefits to the Questa and New Mexico economies, adding up to 400 additional jobs during construction and 13 more long-term jobs to the state.

*Caveats: Economic impacts are for Facility A only. Details on Facilities A and B are available in https://www.nrel.gov/docs/fy23osti/86665.pdf.*
Limitations and Gaps: Economic Impacts

- The results from this study should be interpreted within the context of the assumptions employed in the modeling exercise, as well as limitations of the input-output framework. Thus, the results provided are estimates and not a precise forecast.

  - The model employed for this analysis is a static model and represents the economy-wide linkages and spending patterns in New Mexico regions in 2019. The model does not account for dynamic impacts or changes over time. As such, estimates do not account for changes in the economic structure (such as energy systems, population change, or businesses conditions) over time, instead reflecting economic conditions pre-COVID-19.

  - This study did not assess potential increased demand on public services (safety, roads, water treatment, housing, schools, etc.), environmental impacts, cultural impacts, potential spinoff business or industry expansion, or ownership and distribution of benefits. It did not assess cost-recovery or impact on rate payers.

  - This study did not assess workforce training needs or how the community could pursue clean hydrogen development equitably.

  - The workforce profile results are based on the average national characteristics of U.S. workers provided by the O*NET database (U.S. Department of Labor 2022).\(^1\) Thus, this data does not exactly represent local conditions of the economies analyzed.

\(^{1}\) https://www.onetcenter.org/dictionary/25.1/excel/
Project Conclusions

Is Clean Hydrogen Production a Good Fit for Questa?
Questa's Communities LEAP Timeline

Technical Assistance Begins
Fall 2022

Clean Hydrogen Feasibility Complete
Spring 2023

Economic Impact Assessment
Fall 2023

Technical Assistance Complete
Spring 2024

Public Engagement
Oct. 22, 2022 KCEC board/VoQ Council meeting*
Jan. 2023 KCEC Board approves project scoping, grant writing, etc.
Potential partners And regulators
Key stakeholders
Special interests groups
Aug. 2023 Public meetings**
KCEC board visits NREL’s hydrogen facility

Publications
- **Intermediate feasibility study results: https://www.nrel.gov/docs/fy23osti/86665.pdf
- Economic Impacts Study: this deck and accompanying report https://www.nrel.gov/docs/fy24osti/88932.pdf
# Summary of Study Findings

<table>
<thead>
<tr>
<th>Coalition Goals</th>
<th>Finding</th>
<th>Trade-Offs and Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Impacts</td>
<td>Create jobs in Questa (Village of Questa, Chevron)</td>
<td>Potentially</td>
</tr>
<tr>
<td></td>
<td>Attract more economic activity (Village of Questa, Chevron)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Increase tax base (Village of Questa)</td>
<td>Yes</td>
</tr>
<tr>
<td>Power Sector</td>
<td>Deliver clean, reliable electricity during non-solar and other hard-to-serve times (KCEC)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Maintain affordable energy bills during the transition to clean electricity (KCEC, Village of Questa)</td>
<td>Potentially</td>
</tr>
<tr>
<td></td>
<td>Be a replicable model for other rural and Tribal communities (KCEC, Village of Questa).</td>
<td>Potentially</td>
</tr>
<tr>
<td>Mine Site Remediation</td>
<td>Put existing assets to beneficial use (Chevron)</td>
<td>Potentially</td>
</tr>
<tr>
<td></td>
<td>Support corporate carbon-reduction goals (Chevron)</td>
<td>Yes</td>
</tr>
<tr>
<td>Coalition Goals</td>
<td>Potential Impact</td>
<td>Trade-Offs and Considerations</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Deliver clean, reliable electricity during non-solar and other hard-to-serve times (KCEC) | Long-term hydrogen energy storage effectively shifts excess local solar generation to hard-to-serve times like winter peaks. Water electrolysis and fuel cell components are in final stages of commercial readiness. | • Requires water, with cost and use displacement uncertain.  
• Requires leak detection and management to minimize adverse impacts of hydrogen release.  
• The power sector is in the early stages of adopting long-term hydrogen energy storage.  
• New Mexico may not have commercially available suppliers and manufacturers to meet mid-scenario assumptions.                                                      |
| Maintain affordable energy bills during the transition to clean electricity (KCEC, Village of Questa) | Calculated LCOE (to supply 3.1% of demand during hard-to-serve times) is $0.45/kWh, including estimated IRA incentives. Rate impacts depend on facility ownership, financing, and incentives captured. | • Ownership unknown  
• Cost to members may increase, depending on ownership, incentives captured, and financing.  
• Technology costs and incentives may change.                                                                                                                                                                   |
| Be a replicable model for other rural and tribal communities (KCEC, Village of Questa) | Rural co-ops can be leaders in the energy transition--deploying technological solutions and supporting job creation--by being responsive to their members.                                                                 | • Continuous, transparent, and meaningful public engagement required to deliver benefits to diverse community members.  
• Questa would receive some of the economic benefits but all impacts from hosting project.                                                                                                                       |
## Study Findings: Economic Impacts

<table>
<thead>
<tr>
<th>Coalition Goals</th>
<th>Potential Impact</th>
<th>Trade-Offs and Considerations</th>
</tr>
</thead>
</table>
| Create jobs in Questa (Village of Questa, Chevron)                             | Likely 11 construction jobs and 11 long-term jobs (mid-scenario) to the Village.                                                                                                                                     | • Is this a net job gain or a shift from other occupations?  
  • Is local workforce going to fill these jobs?  
  • Would another industry create more jobs from this scale of investment?  
  • What industry does the community prefer to attract? |
| Attract more economic activity (Village of Questa, Chevron)                    | Likely $1.5 million in output (with $600k in earnings) during construction and $2.5k per year (with $1.1 million per year in earnings) thereafter to the Village.                                               | • Is this the type of industry Questa residents want?  
  • We can’t predict spinoff industry or expansion |
| Increase tax base (Village of Questa)                                         | Would provide approx. $800k in taxes to the Village during construction and $214k (mostly from gross receipts and property taxes) per year thereafter. The Village of Questa is expected to collect $89k/yr in gross receipts tax and $117k/yr in property taxes.* | • It is unclear if tax revenues generated would be sufficient to expand fire and other safety services as may be needed to manage hydrogen risks.  
  • Potential increased demand on public services (roads, water treatment, housing, schools, etc.). |

*Detailed economic analysis for Facility A is available in [https://www.nrel.gov/docs/fy24osti/88932.pdf](https://www.nrel.gov/docs/fy24osti/88932.pdf).
## Study Findings: *Mine Site Remediation*

<table>
<thead>
<tr>
<th>Coalition Goals</th>
<th>Potential Impact</th>
<th>Trade-Offs and Considerations</th>
</tr>
</thead>
</table>
| Put existing assets to beneficial use (Chevron) | Brownfield reuse for solar. Hydrogen facility on Chevron land near existing transmission lines. Source of water rights unknown. | • Visual and other impacts of new industrial facility with increase in traffic, noise, light, etc.  
• Land lease terms and water rights agreements unknown. |
| Support corporate carbon reduction goals (Chevron) | Clean hydrogen fuel-cell equipped vehicles (not combustion engines) have no climate-forcing emissions and do not emit particulate matter. | • Requires water, with cost and use displacement uncertainty.  
• Leaks must be monitored and managed to minimize climate forcing.  
• Heavy-duty fuel cell vehicles are new technology. |
Is Clean Hydrogen Production a Good Fit for Questa? Potential Next Steps

- Assess feasibility and life-cycle impacts of other technology options and economic development opportunities:
  - Could evaluate alternatives to reaching 100% renewable energy. Could evaluate other industries to attract jobs and other economic activity. Could assess environmental impacts of clean hydrogen development and its alternatives, including land and water use, using life-cycle analysis, land use analysis, and related approaches.

- Workforce gap analysis:
  - Could answer the question: What training does our local workforce need to qualify for potential new jobs?

- Third-party validation, cost-benefit analysis, and safety design:
  - Could confirm assumptions of costs and benefits and assess safety considerations before taking on major financial risk.

- Continuous, transparent, meaningful outreach and engagement:
  - Could increase community knowledge and support. Could improve project outcomes and benefits to a variety of stakeholders.

- Develop community benefits agreements and workforce development programs:
  - Could ensure Questa receives benefits commensurate with project risks and remediation for unintended impacts.

“Without local-hiring commitments, communities can fail to gain from the economic benefits associated with additional and/or greater salaries in their neighborhoods.”

- Community benefits agreements* are mutually beneficial agreements outlining developer commitments in exchange for project support. These may be local-hiring commitments and workforce training programs, provision of equipment or staff, remediation funds, local purchasing commitments, or agreements to paying higher taxes to local jurisdictions to support public services.

*More information on community benefits agreements can be found at https://www.nrel.gov/docs/fy23osti/84348.pdf.
References


IMPLAN. https://implan.com/


Thank you

www.energy.gov/communitiesLEAP

DOE/GO-102024-6271
Backmatter
Overview of Results (Least Local Scenario)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>0</td>
<td>$0</td>
<td>$0.8</td>
</tr>
<tr>
<td>Taos County</td>
<td>163</td>
<td>$7</td>
<td>$0.7</td>
</tr>
<tr>
<td>New Mexico</td>
<td>4</td>
<td>$0</td>
<td>$3.3</td>
</tr>
<tr>
<td>Total</td>
<td>167</td>
<td>$7</td>
<td>$4.8</td>
</tr>
</tbody>
</table>

**Construction** (Temporary Impacts)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>0</td>
<td>$0.0</td>
<td>$0.21</td>
</tr>
<tr>
<td>Taos County</td>
<td>7</td>
<td>$0.6</td>
<td>$0.57</td>
</tr>
<tr>
<td>New Mexico</td>
<td>0</td>
<td>$0.0</td>
<td>$0.37</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>$0.6</td>
<td>$1.15</td>
</tr>
</tbody>
</table>

**O&M** (Annual Impacts)

Note: FTE: full-time equivalent (2,080 hr/yr). Monetary values are in 2020 dollars. Numbers may not add up due to rounding.

*Earnings include both wages/salaries and benefits, as well as proprietor income.
Overview of Results (Most Local Scenario)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>98</td>
<td>$4</td>
<td>$0.8</td>
</tr>
<tr>
<td>Taos County</td>
<td>229</td>
<td>$9</td>
<td>$0.9</td>
</tr>
<tr>
<td>New Mexico</td>
<td>245</td>
<td>$15</td>
<td>$5.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>572</strong></td>
<td><strong>$28</strong></td>
<td><strong>$6.8</strong></td>
</tr>
</tbody>
</table>

**Construction** (Temporary Impacts)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questa</td>
<td>11</td>
<td>$1.1</td>
<td>$0.21</td>
</tr>
<tr>
<td>Taos County</td>
<td>5</td>
<td>$0.2</td>
<td>$0.57</td>
</tr>
<tr>
<td>New Mexico</td>
<td>4</td>
<td>$0.3</td>
<td>$0.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>$1.6</strong></td>
<td><strong>$1.18</strong></td>
</tr>
</tbody>
</table>

Note: FTE: full-time equivalent (2,080 hr/yr). Monetary values are in 2020 dollars. Numbers may not add up due to rounding.

*Earnings include both wages/salaries and benefits, as well as proprietor income.
**Detailed Results: Questa Area (Least Local Scenario)**

### Construction and Installation Phase (Temporary Impacts)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction and Installation</td>
<td>0</td>
<td>$0.0</td>
<td>$0.7</td>
</tr>
<tr>
<td>Transportation Services and Others</td>
<td>0</td>
<td>$0.0</td>
<td>$0.1</td>
</tr>
<tr>
<td><strong>Subtotal Direct Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.8</td>
</tr>
<tr>
<td><strong>Indirect (supply-chain) Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td><strong>Induced (labor expenditure) Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td><strong>Total Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.8</td>
</tr>
</tbody>
</table>

### O&M Phase (Annual Impacts)

<table>
<thead>
<tr>
<th></th>
<th>Jobs (FTE / yr)</th>
<th>Earnings (Million $/yr)</th>
<th>Tax Revenue (Million $/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>O&amp;M</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor and Equipment Maintenance</td>
<td>0</td>
<td>$0.0</td>
<td>$0.21</td>
</tr>
<tr>
<td><strong>Subtotal Direct Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.21</td>
</tr>
<tr>
<td><strong>Indirect (supply-chain) Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td><strong>Induced (labor expenditure) Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td><strong>Total Impacts</strong></td>
<td>0</td>
<td>$0.0</td>
<td>$0.21</td>
</tr>
</tbody>
</table>

*Note: Jobs are measured in FTE. Earnings, output, and taxes are presented in 2020 dollars.*
Detailed Results: *Questa: Construction Phase (Most Local Scenario)*

Cumulative Results by Sector in the Economic Area of Questa, in Million Dollars

- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesale Trade
- Retail trade
- Transportation
- Information
- Finance & Insurance
- Real Estate & Rental
- Professional, Scientific & Tech Svcs
- Management of Companies
- Waste Management Services
- Educational Services
- Health Care
- Arts & Entertainment
- Accommodation & Food Svcs
- Other Services
- Government

![Chart showing cumulative results by sector in Million Dollars]

- Personal Income
- Gross Output

Million Dollars
## Detailed Results: Questa Area (Most Local Scenario)

### Construction and Installation Phase (Temporary Impacts)

<table>
<thead>
<tr>
<th>Construction</th>
<th>Jobs (FTE)</th>
<th>Earnings (Million $)</th>
<th>Tax Revenue (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction and Installation</td>
<td>86</td>
<td>$3.2</td>
<td>$0.7</td>
</tr>
<tr>
<td>Transportation Services and Others</td>
<td>10</td>
<td>$0.8</td>
<td>$0.1</td>
</tr>
<tr>
<td>Subtotal Direct Impacts</td>
<td>96</td>
<td>$4.0</td>
<td>$0.8</td>
</tr>
<tr>
<td>Indirect (supply-chain) Impacts</td>
<td>2</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td>Induced (labor expenditure) Impacts</td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td>Total Impacts</td>
<td>98</td>
<td>$4.0</td>
<td>$0.8</td>
</tr>
</tbody>
</table>

### O&M Phase (Annual Impacts)

<table>
<thead>
<tr>
<th>O&amp;M</th>
<th>Jobs (FTE / yr)</th>
<th>Earnings (Million $/yr)</th>
<th>Tax Revenue (Million $/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor and Equipment Maintenance</td>
<td>11</td>
<td>$1.1</td>
<td>$0.21</td>
</tr>
<tr>
<td>Subtotal Direct Impacts</td>
<td>11</td>
<td>$1.1</td>
<td>$0.21</td>
</tr>
<tr>
<td>Indirect (supply-chain) Impacts</td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td>Induced (labor expenditure) Impacts</td>
<td>0</td>
<td>$0.0</td>
<td>$0.0</td>
</tr>
<tr>
<td>Total Impacts</td>
<td>11</td>
<td>$1.1</td>
<td>$0.21</td>
</tr>
</tbody>
</table>

*Note: Jobs are measured in FTE. Earnings, output, and taxes are presented in 2020 dollars.*
## Detailed Results: Questa Area (Most Local Scenario)

### Top Occupations Supported During Construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
<th>Education</th>
<th>Training</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-2061</td>
<td>Construction laborers</td>
<td>6</td>
<td>High school</td>
<td>3-6 mo</td>
<td>1-3 mo</td>
</tr>
<tr>
<td>47-2031</td>
<td>Carpenters</td>
<td>4</td>
<td>High school</td>
<td>1-2 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>47-2111</td>
<td>Electricians</td>
<td>3</td>
<td>High school+</td>
<td>2-4 yr</td>
<td>4-6 yr</td>
</tr>
<tr>
<td>53-3032</td>
<td>Heavy and tractor-trailer truck drivers</td>
<td>3</td>
<td>High school a</td>
<td>1-3 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>47-1011</td>
<td>First-line supervisors of construction trades and extraction workers</td>
<td>3</td>
<td>High school + b</td>
<td>6 mo-1 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>47-2152</td>
<td>Plumbers, pipefitters, and steamfitters</td>
<td>2</td>
<td>High school</td>
<td>3-6 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>43-9061</td>
<td>Office clerks, general</td>
<td>2</td>
<td>Some college</td>
<td>1-3 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>47-2073</td>
<td>Operating engineers and other construction equipment operators</td>
<td>2</td>
<td>High school</td>
<td>1-3 mo</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>49-9021</td>
<td>Heating, air conditioning, and refrigeration mechanics and installers</td>
<td>2</td>
<td>High school</td>
<td>3-6 mo</td>
<td>6 mo-1 yr</td>
</tr>
<tr>
<td>11-9021</td>
<td>Construction managers</td>
<td>2</td>
<td>College</td>
<td>1-2 yr</td>
<td>4-6 yr</td>
</tr>
<tr>
<td>47-2073</td>
<td>Proprietors (construction, transportation general, and subcontractors) c</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a A CDL truck driver job requires a CDL.
*b High school+: Post-secondary certificate.
*c Proprietors’ jobs are mainly composed of independent contractors (owner-operators) in construction and transportation (e.g., truck drivers who own their own trucks, a carpenter that owns his own company and is the sole employee, etc.).

**Mediation Profile Requirements**

- **Education**: High school, High school+ (Post-secondary certificate), Some college, College
- **Training**: 3-6 mo, 1-3 mo, 1-2 yr, 2-4 yr, 6 mo-1 yr
- **Experience**: 1-3 mo, 1-2 yr, 4-6 yr, 6 mo-1 yr

**Workforce Profile Data:** 2019 Occupation Dataset from IMPLAN

---

**Distribution of Jobs Supported by Industry**

- **Construction**: Orange
- **Transportation**: Blue
- **Professional Services**: Green
- **Other Sectors**: Yellow
Detailed Results: Questa Area (Most Local Scenario)

### Top Occupations Supported Annually During Operation

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
<th>Education</th>
<th>Training</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-8091</td>
<td>Chemical plant and system operators</td>
<td>4</td>
<td>High school</td>
<td>6 mo-1 yr</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>51-1011</td>
<td>First-line supervisors of production and operating workers$^b$</td>
<td>2</td>
<td>High school +$^a$</td>
<td>3-6 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>11-3051</td>
<td>Industrial production managers</td>
<td>1</td>
<td>Associate’s degree</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>49-1011</td>
<td>First-line supervisors of mechanics, installers, and repairers$^b$</td>
<td>1</td>
<td>High school +</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>49-9041</td>
<td>Industrial machinery mechanics</td>
<td>1</td>
<td>High school +</td>
<td>6 mo-1 yr</td>
<td>2-4 yr</td>
</tr>
<tr>
<td>43-9061</td>
<td>Office clerks, general</td>
<td>1</td>
<td>Some college</td>
<td>1-3 mo</td>
<td>1-2 yr</td>
</tr>
<tr>
<td>49-2095</td>
<td>Electrical and electronics repairers, powerhouse, substation, and relay</td>
<td>0.5</td>
<td>High school +</td>
<td>2-4 yr</td>
<td>2-4 yr</td>
</tr>
</tbody>
</table>

$^a$High school+: Post-secondary certificate.

$^b$Supervisors also act as Safety Officers.

### Distribution of Jobs Supported by Industry

- **Hydrogen Facility**
- **Solar Facility**

*Workforce Profile Data: 2019 Occupation Dataset from IMPLAN*
Detailed Results: All of NM: O&M (Mid Scenario)

Cumulative Results by Sector in the Economic Area of Questa, in Thousand Dollars

*Values go beyond scale shown: personal income $1,087 thousand.
Occupation Results: Rest of Taos and NM (Most Local Scenario)

### Construction and Installation Phase (Temporary Jobs): Rest of Taos

**Top five major occupation groups supported during construction**

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-0000</td>
<td>Architecture and engineering occupations</td>
<td>18</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>17</td>
</tr>
<tr>
<td>35-0000</td>
<td>Food preparation and serving-related occupations</td>
<td>10</td>
</tr>
<tr>
<td>53-0000</td>
<td>Transportation and material-moving occupations</td>
<td>9</td>
</tr>
<tr>
<td>33-0000</td>
<td>Protective service occupations</td>
<td>9</td>
</tr>
</tbody>
</table>

### Construction and Installation Phase (Temporary Jobs): Rest of NM

**Top five major occupation groups supported during construction**

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-0000</td>
<td>Production occupations</td>
<td>41</td>
</tr>
<tr>
<td>53-0000</td>
<td>Transportation and material-moving occupations</td>
<td>32</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>25</td>
</tr>
<tr>
<td>41-0000</td>
<td>Sales and related occupations</td>
<td>15</td>
</tr>
<tr>
<td>11-0000</td>
<td>Management occupations</td>
<td>12</td>
</tr>
</tbody>
</table>

**Workforce Profile**

**EDUCATION REQUIREMENTS**

- **High**: Bachelor’s degree or above (21%)
- **Low**: High school diploma or less (54%)
- **Medium**: Associate’s degree or less (25%)

**PRIOR WORK EXPERIENCE**

- **None**: 7%
- **1-2 years**: 25%
- **2-6 years**: 18%
- **More than 6 yrs**: 29%
Occupation Results: All regions (Least vs. Most Local Scenarios)

Construction and Installation Phase (Temporary Jobs): Least Local
Top five major occupation groups supported during construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-0000</td>
<td>Construction and extraction occupations</td>
<td>30</td>
</tr>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>14</td>
</tr>
<tr>
<td>33-0000</td>
<td>Protective service occupations</td>
<td>8</td>
</tr>
<tr>
<td>49-0000</td>
<td>Installation, maintenance, and repair occupations</td>
<td>6</td>
</tr>
<tr>
<td>11-0000</td>
<td>Management occupations</td>
<td>6</td>
</tr>
</tbody>
</table>

Construction and Installation Phase (Temporary Jobs): Most Local
Top five major occupation groups supported during construction

<table>
<thead>
<tr>
<th>SOC</th>
<th>Occupation Description</th>
<th>FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>43-0000</td>
<td>Office and administrative support occupations</td>
<td>47</td>
</tr>
<tr>
<td>53-0000</td>
<td>Transportation and material-moving occupations</td>
<td>46</td>
</tr>
<tr>
<td>51-0000</td>
<td>Production occupations</td>
<td>45</td>
</tr>
<tr>
<td>47-0000</td>
<td>Construction and extraction occupations</td>
<td>36</td>
</tr>
<tr>
<td>17-0000</td>
<td>Architecture and engineering occupations</td>
<td>28</td>
</tr>
</tbody>
</table>

Workforce Profile

EDUCATION REQUIREMENTS

- High: 22%
- Medium: 28%
- Low: 50%

PRIOR WORK EXPERIENCE

- None: 10%
- Less than 1 yr: 21%
- 1-2 years: 26%
- 2-8 years: 24%
- More than 6 yrs: 19%

Low: High school diploma or less
Medium: Associate’s degree or less
High: Bachelor’s degree or above
Detailed Results: All of NM: Construction Phase (Most Local Scenario)

Total Output (Million Dollars)

- Questa, $10.67, 11%
- Rest of Taos, $28.07, 28%
- Rest of NM, $61.72, 61%

Value Added Breakdown by Region

- Questa
- Rest of Taos
- Rest of New Mexico

Tax Impacts

- Questa: $0.8
- Rest of Taos: $0.9
- Rest of New Mexico: $5.1

www.energy.gov/communitiesLEAP
Detailed Results: All of NM: Construction Phase (Most Local Scenario)

Cumulative Results by Sector in all NM (all regions combined)

- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesale Trade
- Retail trade
- Transportation
- Information
- Finance & Insurance
- Real Estate & Rental
- Professional, Scientific & Tech Svcs
- Management of Companies
- Waste Management Services
- Educational Services
- Health Care
- Arts & Entertainment
- Accommodation & Food Svcs
- Other Services
- Government

Bars represent different regions and scenarios:
- Questa (Industrial Output)
- Rest of Taos (Industrial Output)
- Rest of NM (Industrial Output)
- Questa (Personal Income)
- Rest of Taos (Personal Income)
- Rest of NM (Personal Income)
Detailed Results: All of NM: Construction Phase (Least Local Scenario)

Cumulative Results by Sector in all NM (all regions combined)

- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesale Trade
- Retail trade
- Transportation
- Information
- Finance & Insurance
- Real Estate & Rental
- Professional, Scientific & Tech Svcs
- Management of Companies
- Waste Management Services
- Educational Services
- Health Care
- Arts & Entertainment
- Accommodation & Food Svcs
- Other Services
- Government

Million Dollars

- Questa (Industrial Output)
- Rest of Taos (Industrial Output)
- Rest of NM (Industrial Output)
- Questa (Personal Income)
- Rest of Taos (Personal Income)
- Rest of NM (Personal Income)
Results: All of NM: O&M (Mid Scenario)

Total Output (Million Dollars)
- Questa Economic Area, $0.002, 0%
- Rest of NM, $0.55, 8%
- Rest of Taos, $6.394, 92%

Value Added Breakdown by Region
- Questa
- Rest of Taos
- Rest of New Mexico

Tax Impacts
- Questa: 0.21
- Rest of Taos: 0.57
- Rest of New Mexico: 0.40
Detailed Results: All of NM: O&M (Mid Scenario)

Cumulative Results by Sector in all NM (all regions combined)

"Utilities" includes both the hydrogen and solar facilities. **Values go beyond scale shown: gross output $5.70 million and personal income $1.09 million.**