

Oregon Energy Strategy

Jobs Analysis Technical Report

December 16, 2025

[bw]

RESEARCH
PARTNERSHIP



Note:

The following slides include data from the jobs analysis for the Oregon Energy Strategy. Due to its technical nature, these slides are not fully accessible for those using screen readers. Instead, those using screen readers may access this same data in the following file: <https://www.oregon.gov/energy/Data-and-Reports/Documents/OES-Jobs-Analysis-Data-Library.xlsx>

Please contact the Oregon Department of Energy at AskEnergy@oregon.gov if you need further assistance.

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Jobs Analysis



*Secondary Employment Outputs are reported for 2024 and 2035 only

**Part 1:
Introduction**

**Model
Framework**

1. Determine unit inputs

From EER data – e.g., device stocks and sales, MW electric capacity, fuel demand, etc.



2. Determine unit and total costs

From EER data where provided, additional costs may be assumed from secondary sources.



3. Split costs into industry category by technical costs data

Segment overall costs from EER into industries and based on activity using secondary data sources – e.g., installation of efficiency measures, manufacturing of EV batteries, etc.



4. Apply multipliers

Input 5-year-increment costs into IMPLAN/JEDI industry multipliers based on the above cost allocation

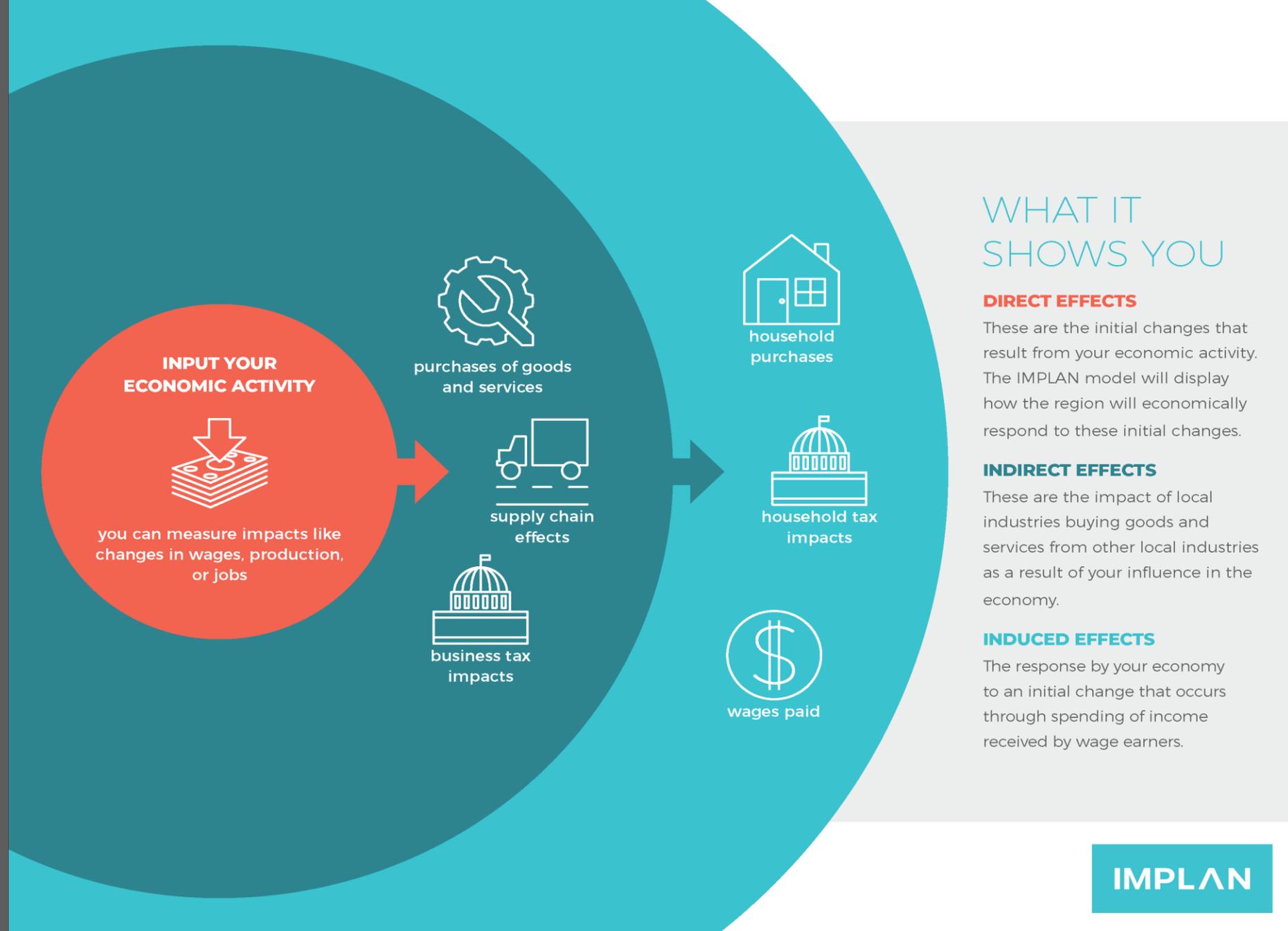


5. Report

Jobs created by industry group, detailed occupation, and region (per 5-year increments)

Part 1: Introduction

Summary of Input Output Models, IMPLAN & JEDI



Part 1: Introduction

Model Framework

Job Numbers Include & Do Not Include

Include	Do Not Include
Direct, Indirect, and Induced employment changes from the four primary sectors (Electricity, Fuels, Buildings & Transportation)*	The entire economy; this is not a general equilibrium macroeconomic model that measures all the potential changes in the economy
<i>For example:</i>	
Construction jobs to build new power plants to meet increased electricity demand from data centers	Construction jobs to build the data center facilities
Electricians needed to install solar projects or new transmission and distribution power lines	Electricians needed to respond to more frequent extreme weather events impacting transmission lines
Manufacturing jobs assembling components of a home heating appliance, motor vehicle, or piece of fuel processing equipment	Jobs gained or lost at a manufacturing facility due to cost changes in process inputs, including energy, steel, etc.

Part 1: Introduction

Model Framework

- The job metrics presented here are point-in-time estimates, or jobs held within each of the benchmark years. They are not FTEs or job-years and are not cumulative changes over intervening years.
- Job figures reflect the ebb and flow of investments and activities over time.
- Job figures can inform workforce development strategies by identifying required educational programs, apprenticeship trainings, or certifications to support growing sectors.
- While the jobs analysis results are directional and give a sense of scale of future employment demand in Oregon, uncertainty exists in any model.

I. Energy Supply

Electricity: 12 sub-sectors

- **Distributed Solar** (Rooftop Solar)
- **Distribution** (Local Power Lines, Smart Grid)
- **Hydropower** (Large-Scale and Run-of-River Hydroelectric Power Generation)
- **Land-Based Wind** (Land-Based Wind Farms)
- **Gas Generation** (Gas Peaker Plants, Combustion Turbine Plants, Combined Cycle Plants)
- **Nuclear** (High-Temperature Gas-Cooled Reactors, Small Modular Reactors*)
- **Other Fossil Generation** (Oil, Other Fossil Fuel Burning Plants)
- **Other Renewable Generation - Biomass**
- **Other Renewable Generation – Enhanced Geothermal***
- **Storage** (Batteries, Flywheel, Thermal Energy, Pumped Hydro)
- **Transmission** (Regional Transmission)
- **Utility Solar** (Utility Photovoltaic, Concentrated Solar Power)

*Denotes emerging technology which would need additional development in affordability and scalability to reach levels projected by EER modeling through 2050.

I. Energy Supply

Fuels: 5 sub-sectors

- **Hydrogen** (Hydrogen Electrolysis and Transportation)
- **Biofuels** (Ethanol, Bio-gasification, Biomass Fast Pyrolysis)
- **Natural Gas Production, Trade, and Support Services**
- **Natural Gas Distribution** (Natural Gas Pipelines, Liquefied Natural Gas Trucks and Tankers)
- **Other Fossil Fuels** (Oil and Gas, Coal, Kerosene)

II. Energy Demand

Buildings: 5 sub-sectors*

- **Commercial HVAC** (Pipes, Sheet Metal, Heating, Air Conditioning, Refrigeration, Power Boilers, Heat Exchangers)
- **Commercial Other** (Commercial Lighting, Cooking, Refrigeration, Water Heating, etc.)
- **Residential HVAC** (Sheet Metal, Heating, Air Conditioning)
- **Residential Shell** (Paintings, Coatings, Insulation, Windows, Doors)
- **Residential Other** (Laundry, Refrigerators, Lighting, Water Heating, Cooking, Freezing, Clothes Washing and Drying, Dishwashing, etc.)

*Commercial Shell is not included as a Buildings sub-sector because it is not included in the EER EnergyPATHWAYS model.

II. Energy Demand

Transportation: 5 sub-sectors

- **Charging Stations** (Manufacturing, Installation, Maintenance)
- **Fueling Stations** (Fossil Fueling Stations)
- **Vehicle Maintenance** (Vehicle Repair and Maintenance Activities)
- **Vehicle Manufacturing** (Electric Vehicles, Conventional Vehicles, Dual-Use Technologies)
- **Wholesale Trade Parts** (Wholesale of Vehicle Components)

Oregon Energy Strategy

Part 1: Introduction

Initial Employment Outputs (IEOs) include:

1. Employment in East Oregon, West Oregon, and Oregon for 2024, 2030, 2035, 2040, 2045 & 2050
2. Overall and Industry annual employment by sub-sector in each region

Oregon Energy Strategy

Part 1: Introduction



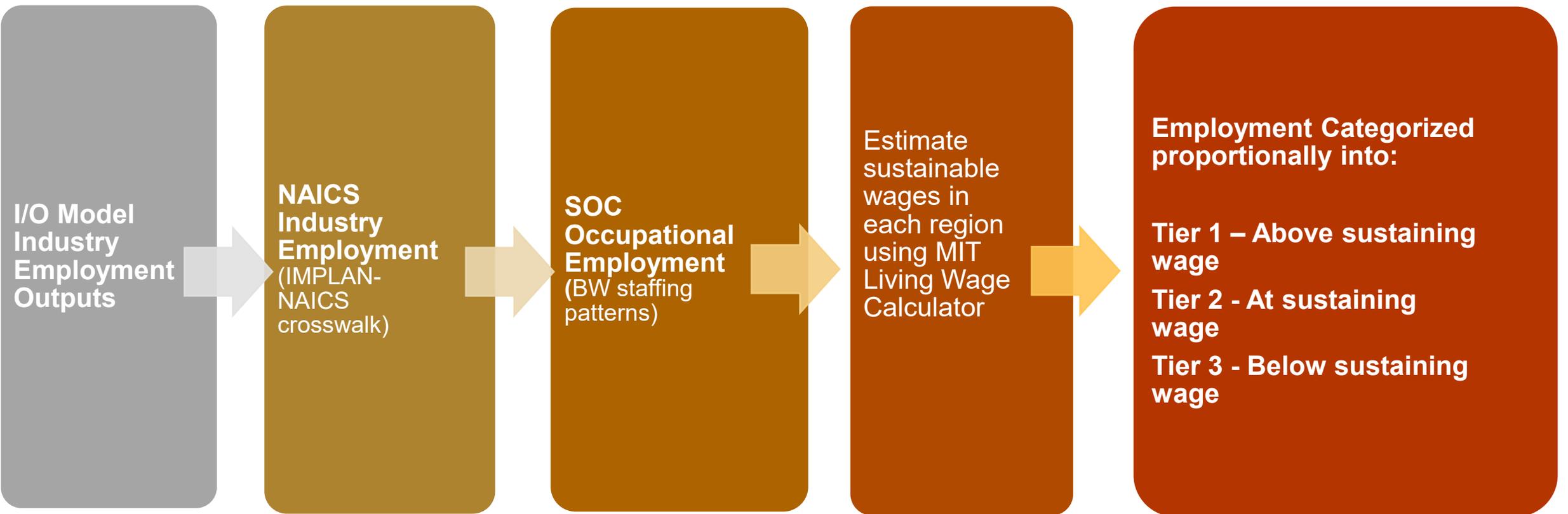
- Employment figures in this deck cover the construction, manufacturing, professional services, other supply chain, and induced industry categories:
 - **Construction** includes new and maintenance and repair construction
 - **Manufacturing** includes equipment fabrication, fuel production, and machinery manufacturing
 - **Professional Services** includes law offices, accounting services, and engineering and design
 - **Other Supply Chain** includes agriculture, utilities, wholesale trade, transportation, and other services
 - **Induced** includes employment supported by direct and indirect workers spending their wages in the local economy, e.g., employment at restaurants, hospitals, banks, etc.

Part 1: Introduction

Secondary Employment Outputs (SEOs) include:

1. Occupational employment for 2024 and 2035, by sector
2. Wage analysis for 2024 and 2035, by sector
3. Regional comparison for 2024 and 2035, by sector

IEO to SEO & Wage Analysis



Oregon Energy Strategy

Part 1: Introduction

Reference Scenario Energy Model Description

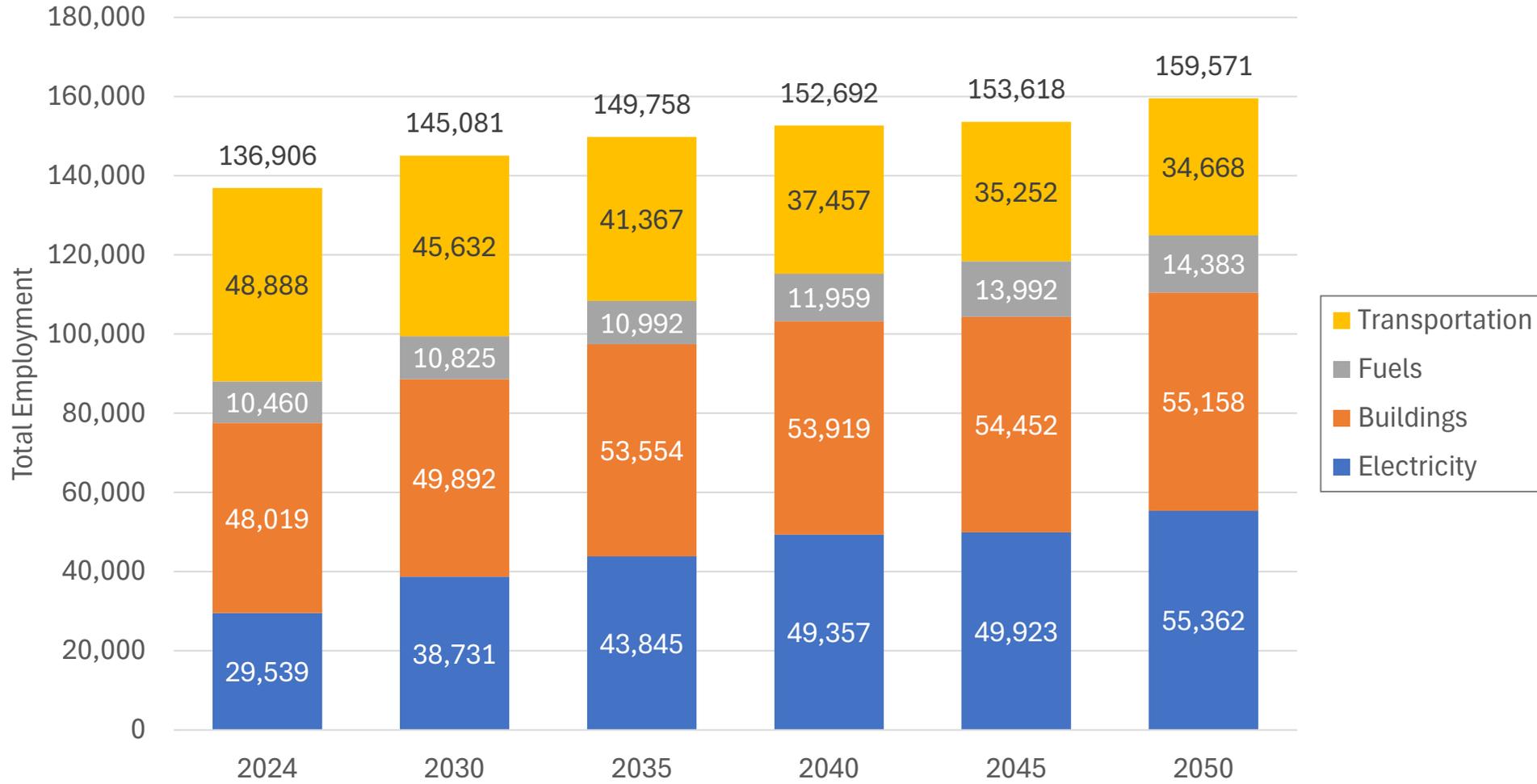
- The Evolved Energy Research (EER) model must solve to meet **Oregon's anchor climate and clean energy goals**:
 - *Executive Order 20-04* (80 percent economy-wide reduction in greenhouse gas emissions by 2050)
 - *HB 2021* (100 percent reduction in greenhouse gas emissions by 2040 for the state's largest investor-owned electric utilities and Electricity Service Suppliers)
 - *The Climate Protection Program* (90 percent reduction in greenhouse gas emissions from fuels by 2050)
- Built on **best available data** and **aggressive but achievable assumptions** that reflect least-cost path to decarbonization
 - Developed in collaboration with industry and community experts to inform modeling inputs
 - Where possible, uses Oregon-specific data collected from up-to-date Oregon datasets, past studies, and consultations
- Determines **energy demand** from energy-consuming technologies across 80 different sub-sectors over time
 - Assumptions about how these technologies change, including improvements in energy efficiency, when these technologies are expected to turn over, and what they will be replaced with at the end of their useful life
 - Also considers factors like weather, population growth, industrial load growth
- Searches for **least-cost mix of resources to meet demand** across all energy-consuming sectors while meeting key climate and energy goals and maintaining reliability
 - Also considers availability of energy supply infrastructure to deliver that energy
- For more detail, see [Energy Modeling Technical Report](#), pg. 13, and [Modeling Assumptions and Sources](#)



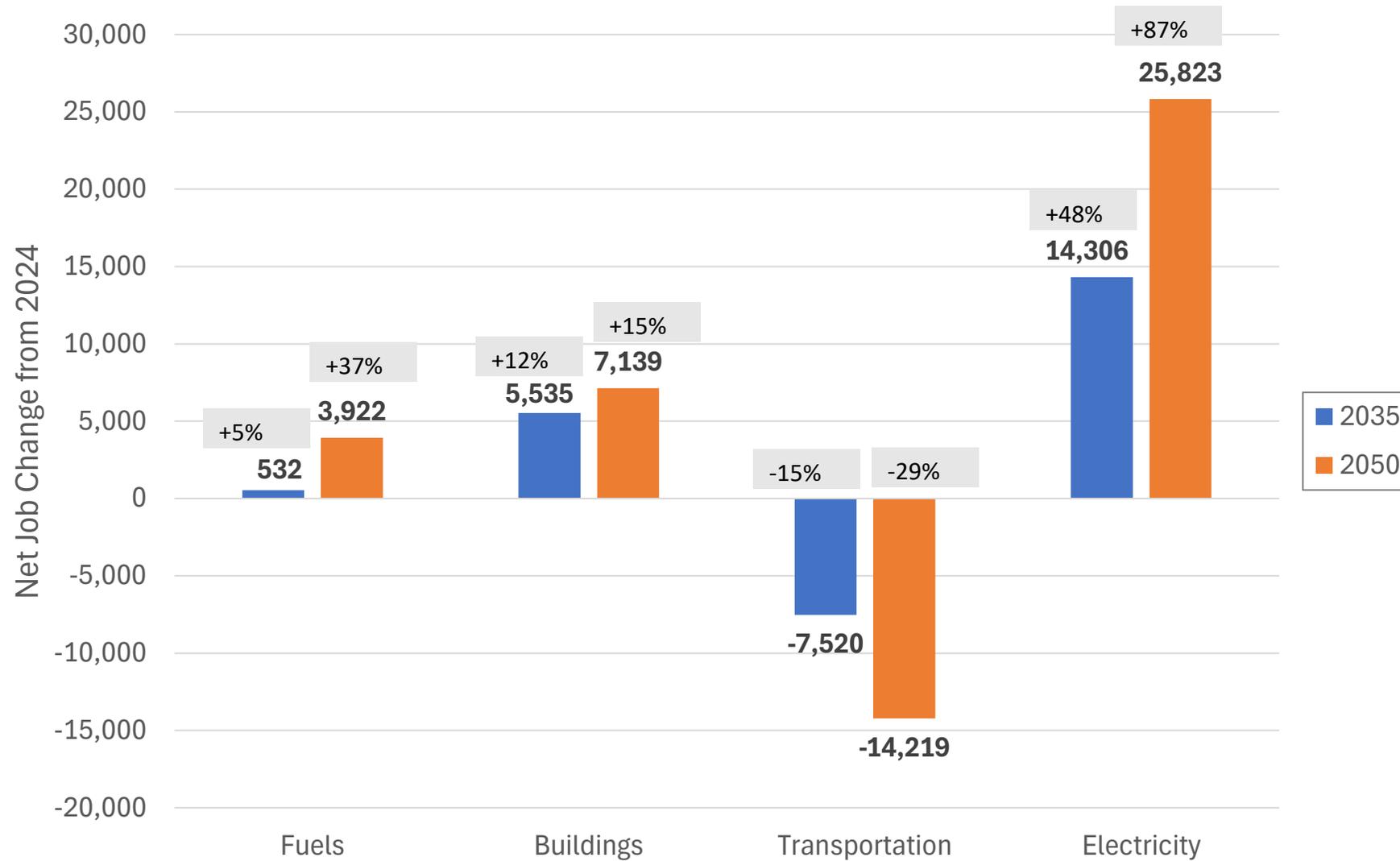
Part 2.1

Reference Scenario Key Findings - Oregon

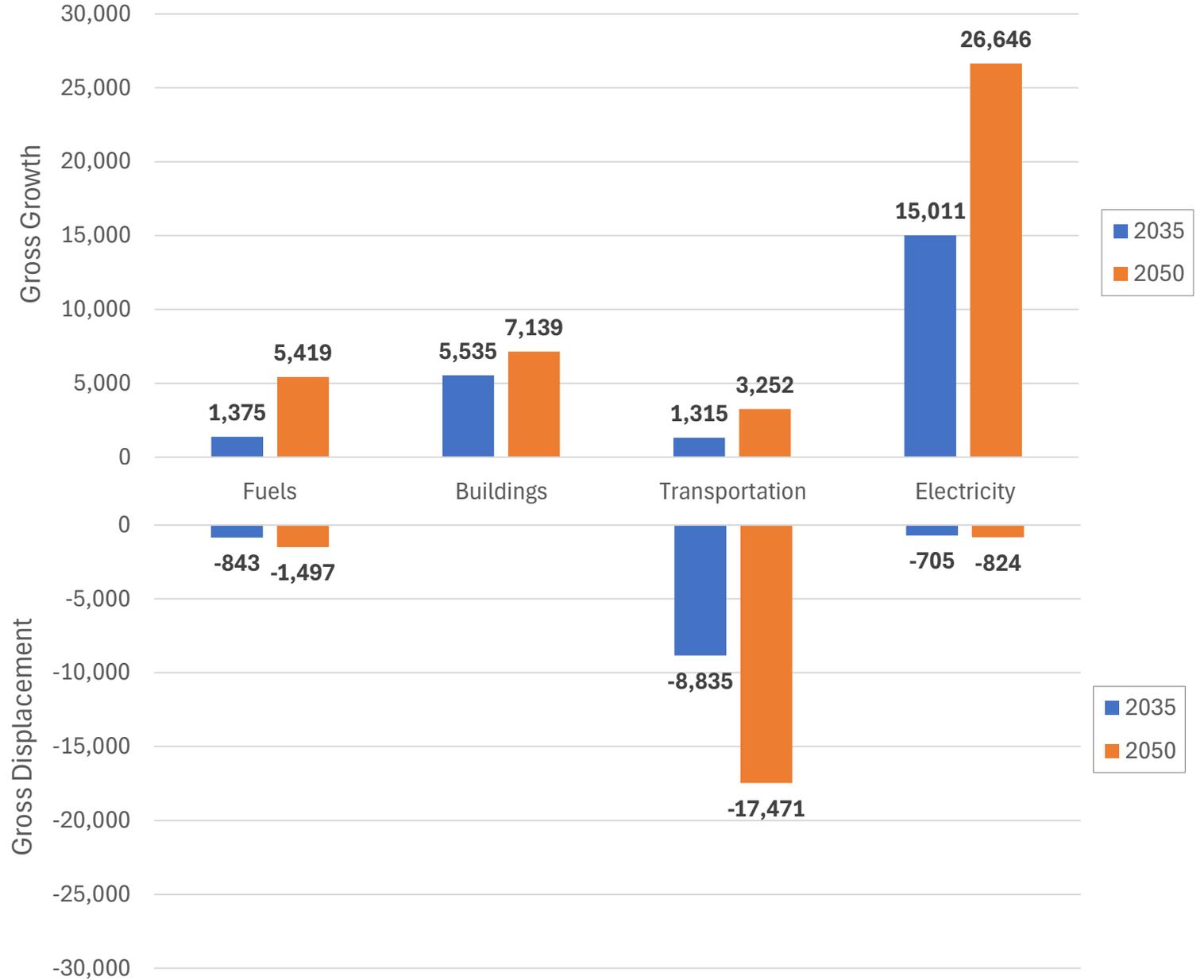
REFERENCE SCENARIO: **TOTAL EMPLOYMENT, OREGON**



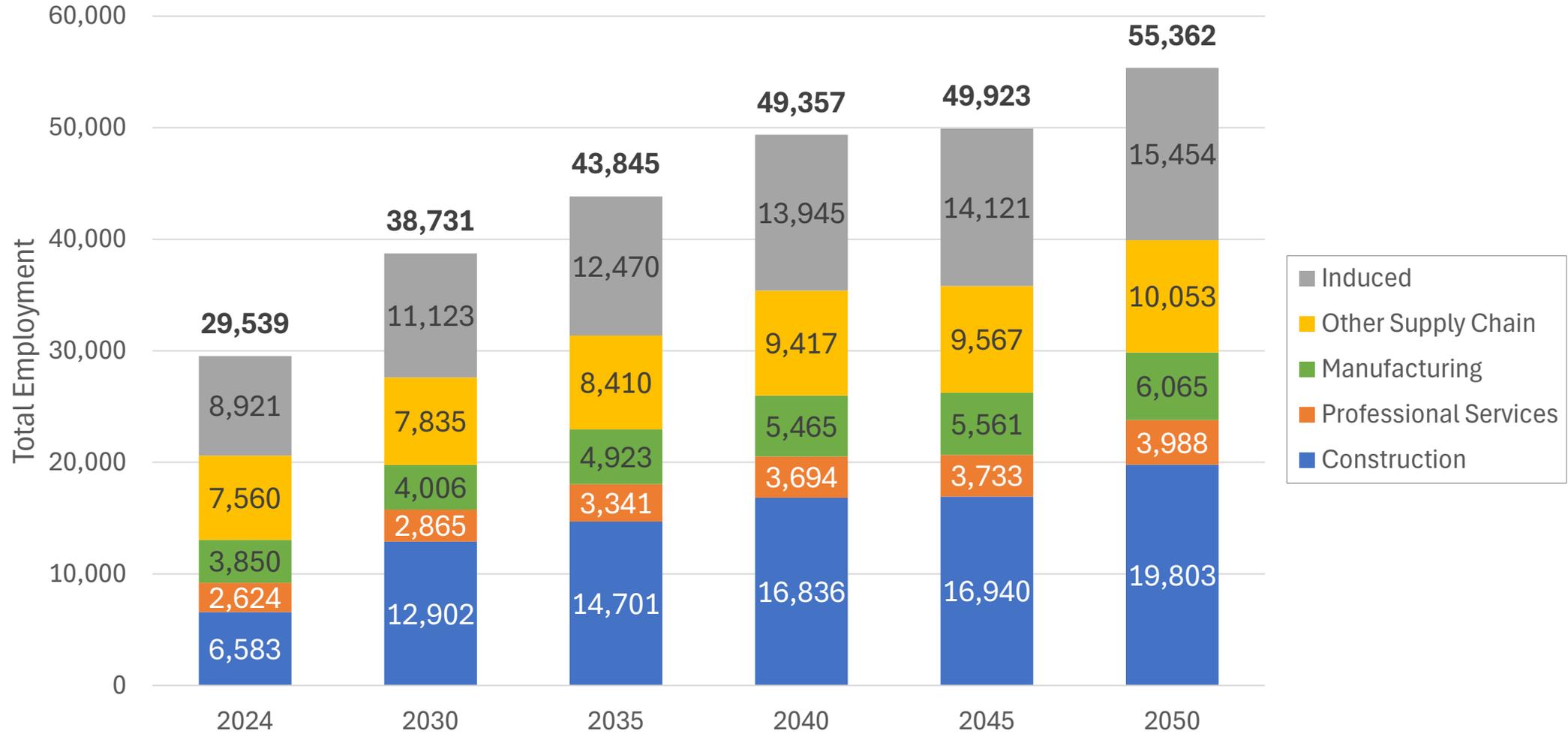
REFERENCE SCENARIO: NET EMPLOYMENT CHANGES FROM 2024, OREGON



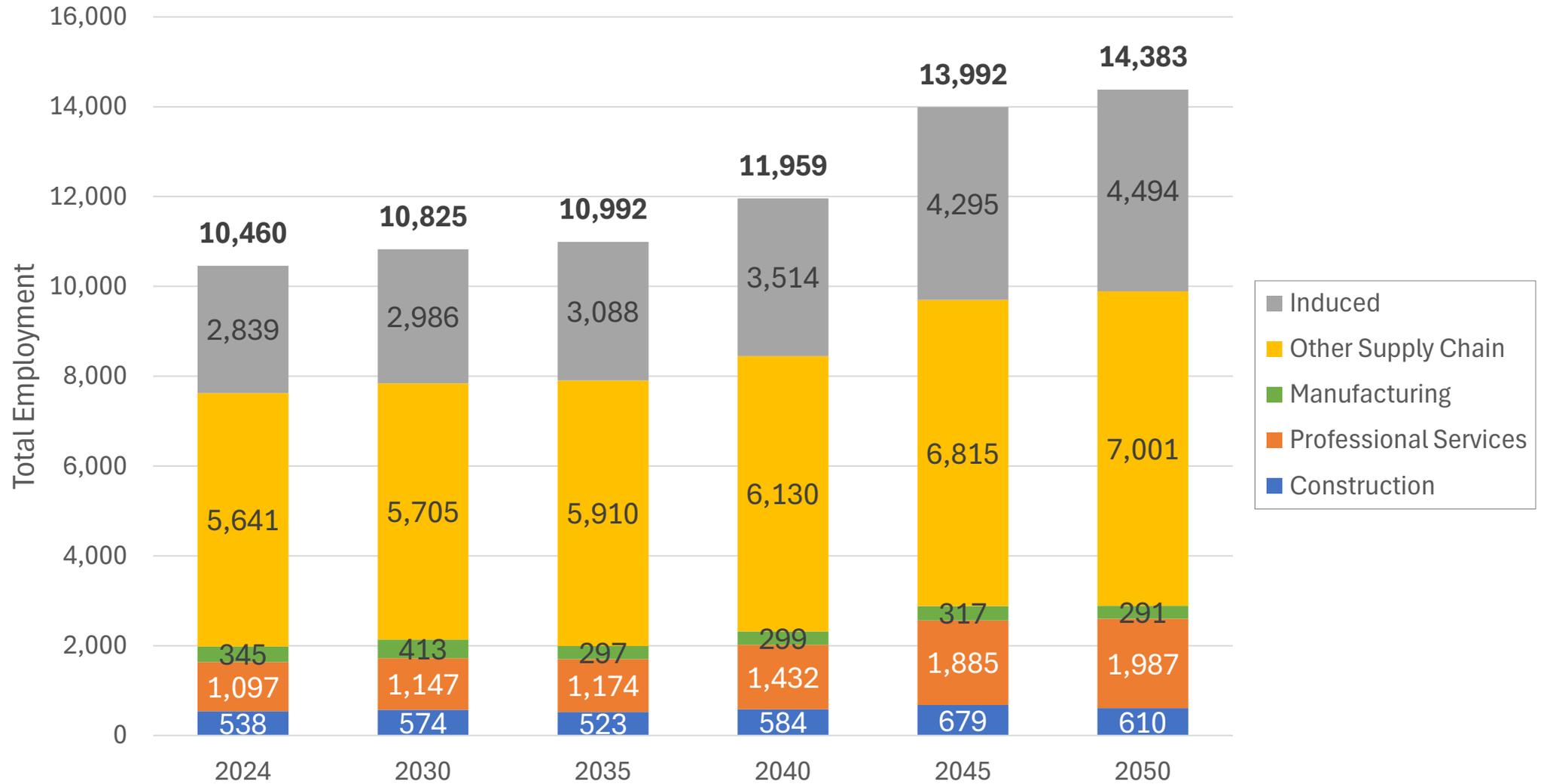
REFERENCE SCENARIO:
GROSS EMPLOYMENT CHANGES
FROM 2024, OREGON



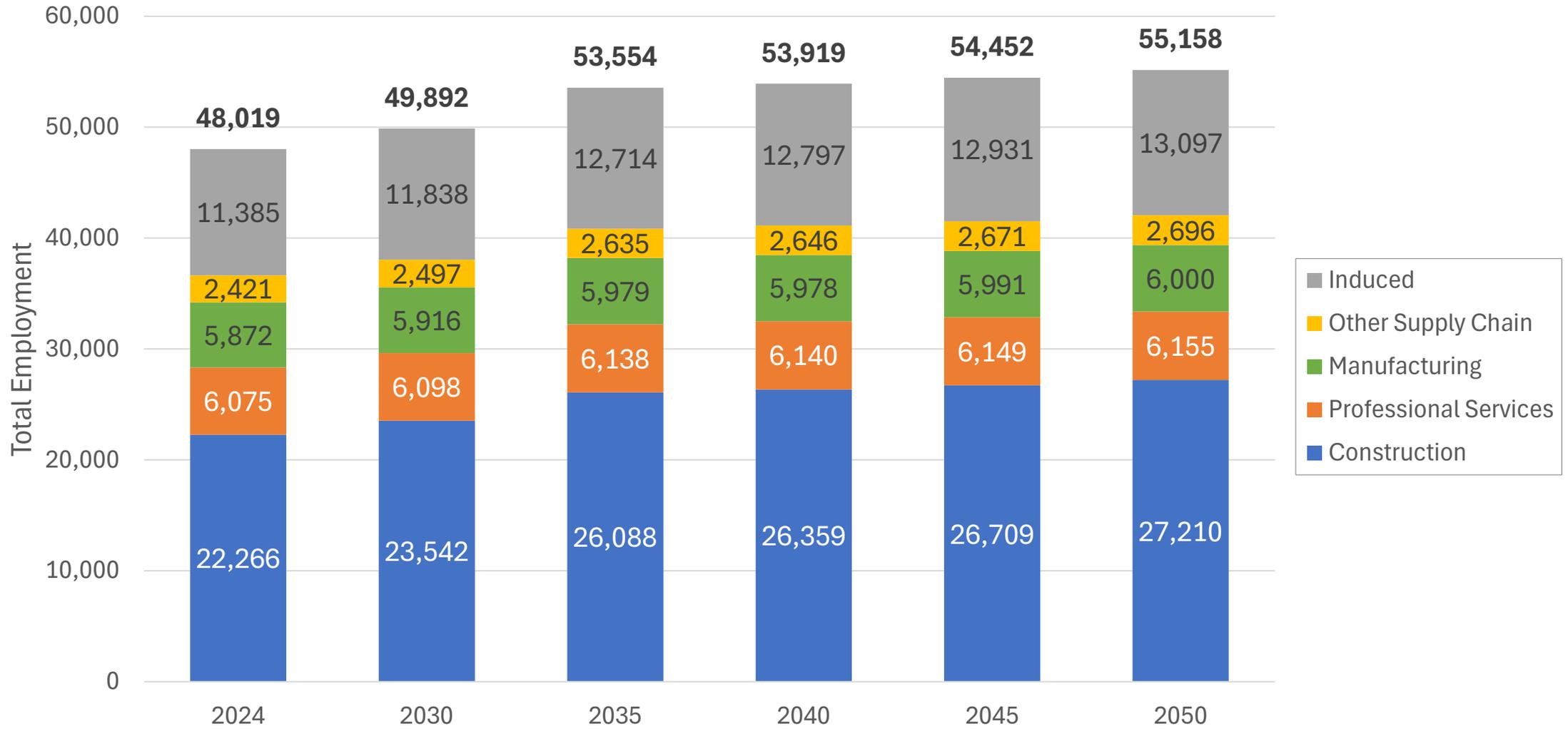
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, ELECTRICITY – TOTALS



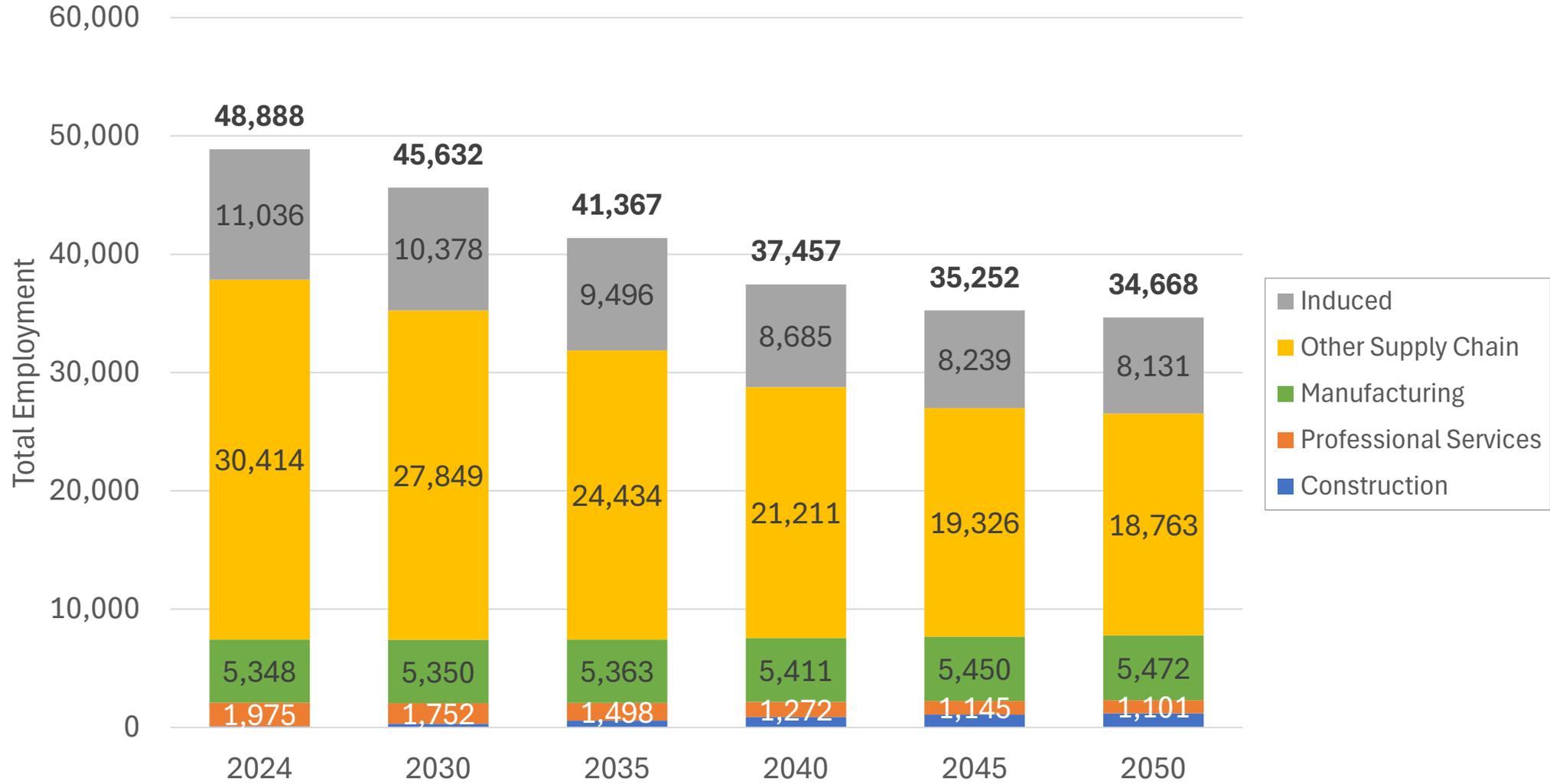
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, FUELS – TOTALS



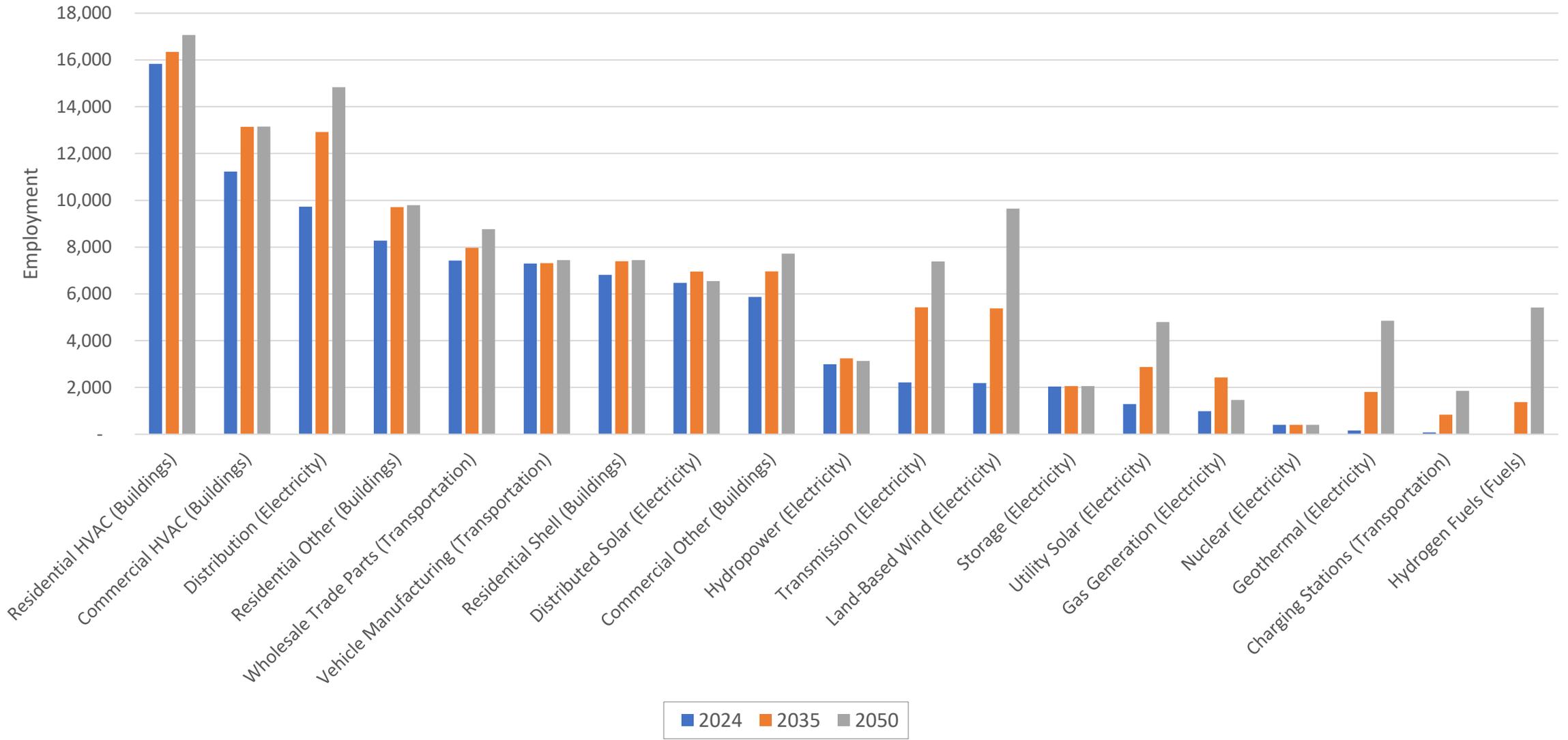
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, BUILDINGS – TOTALS



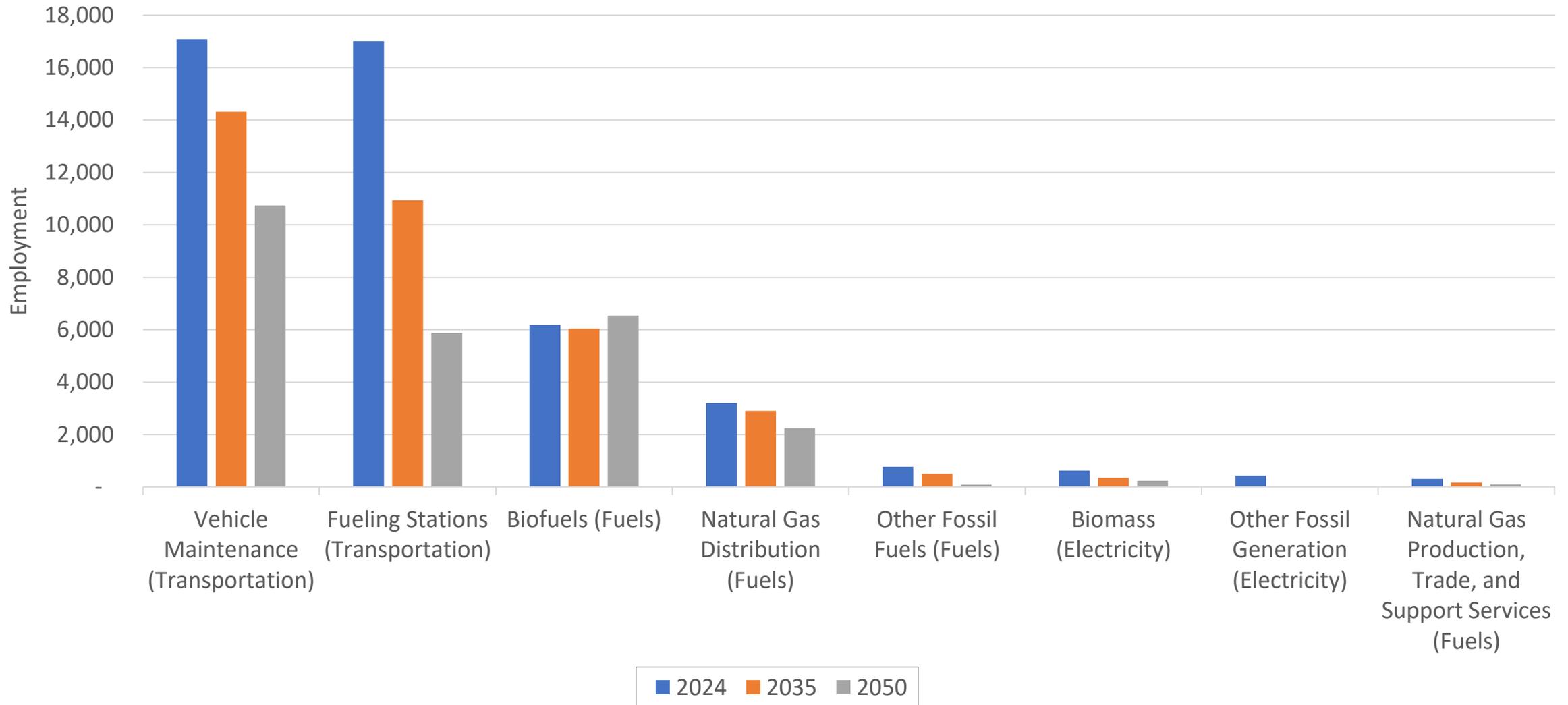
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, TRANSPORTATION – TOTALS



REFERENCE SCENARIO: GROWTH SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050



REFERENCE SCENARIO: DISPLACED SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050



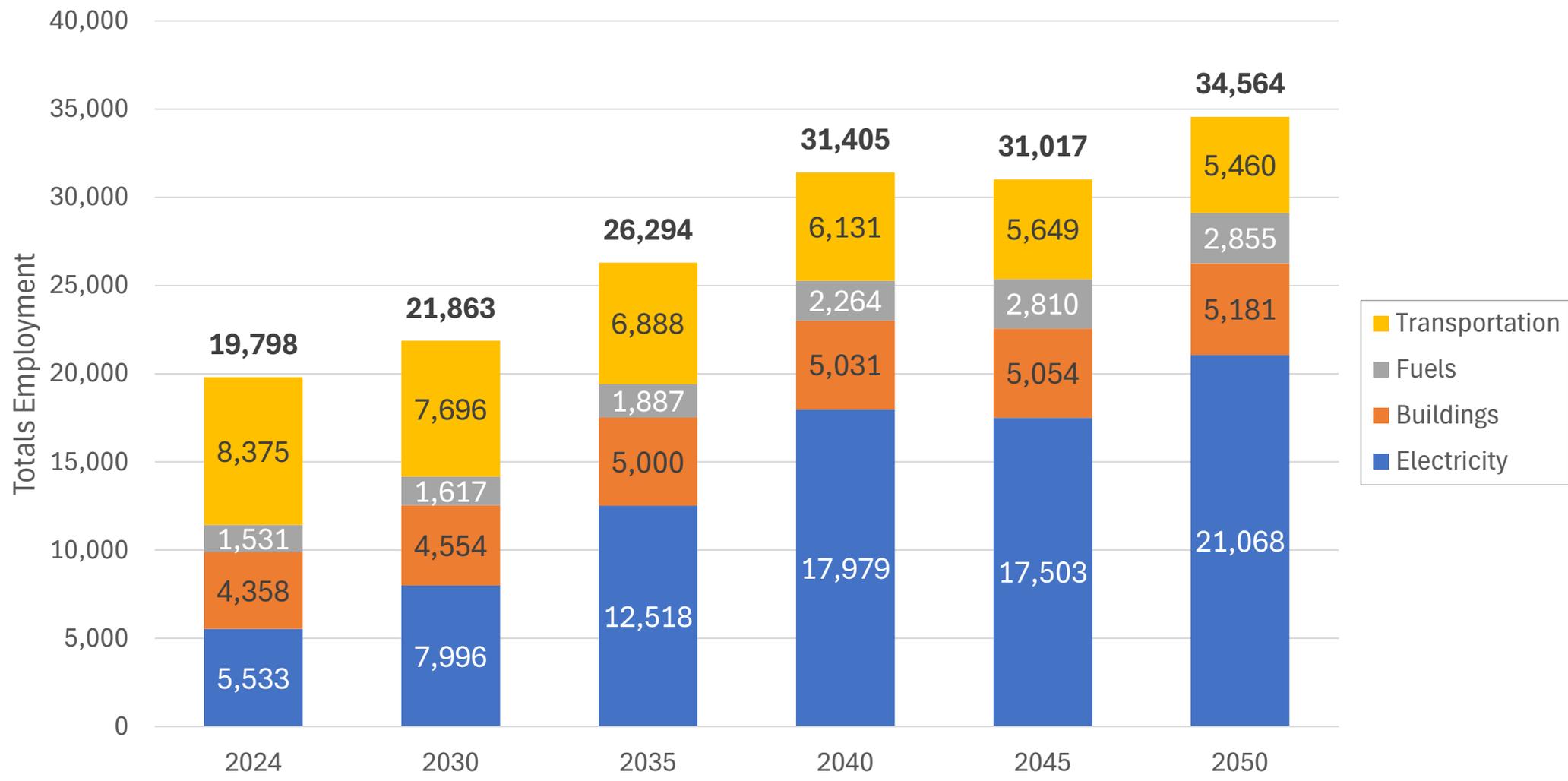


Part 2.2

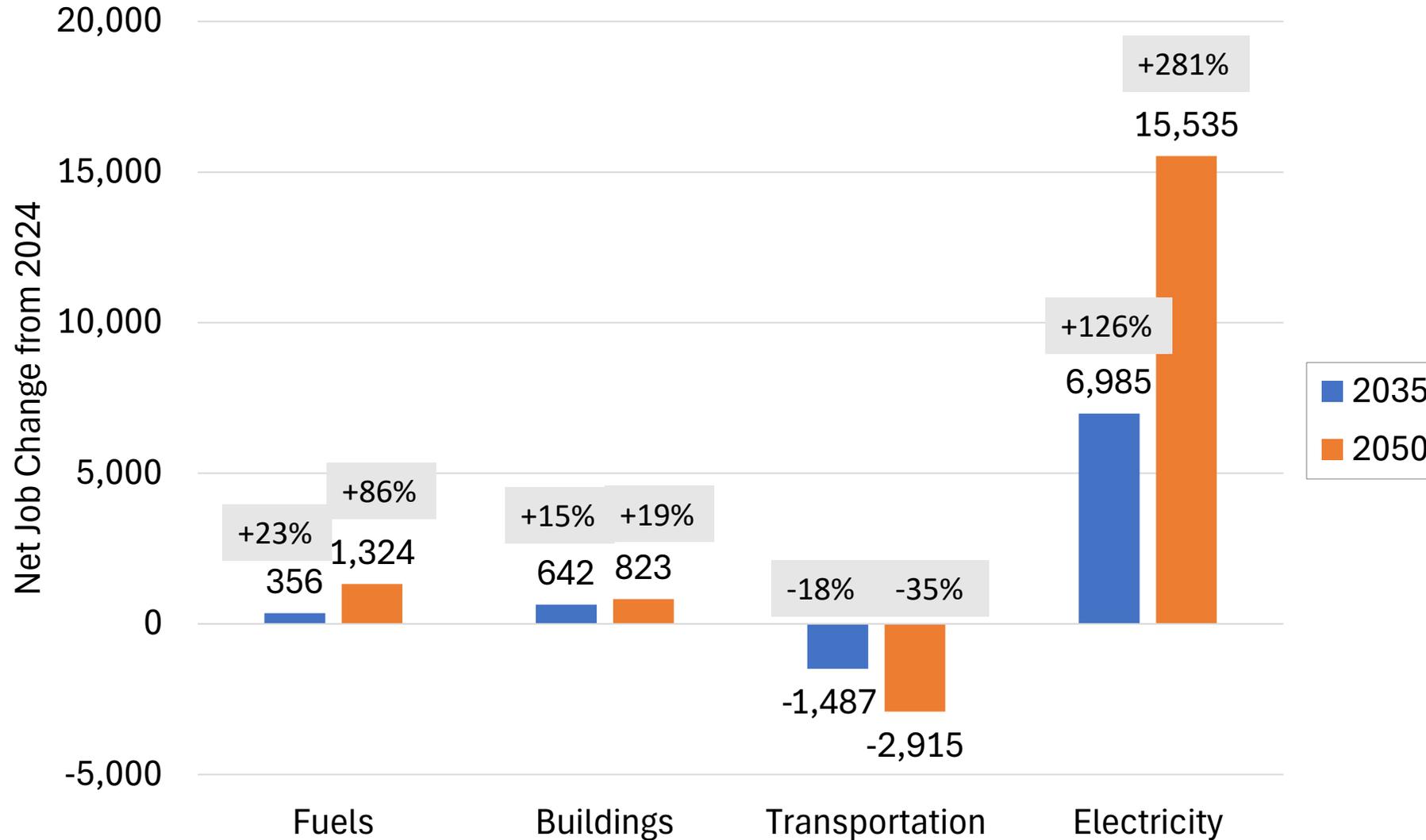
Reference Scenario Key Findings – East Oregon*

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

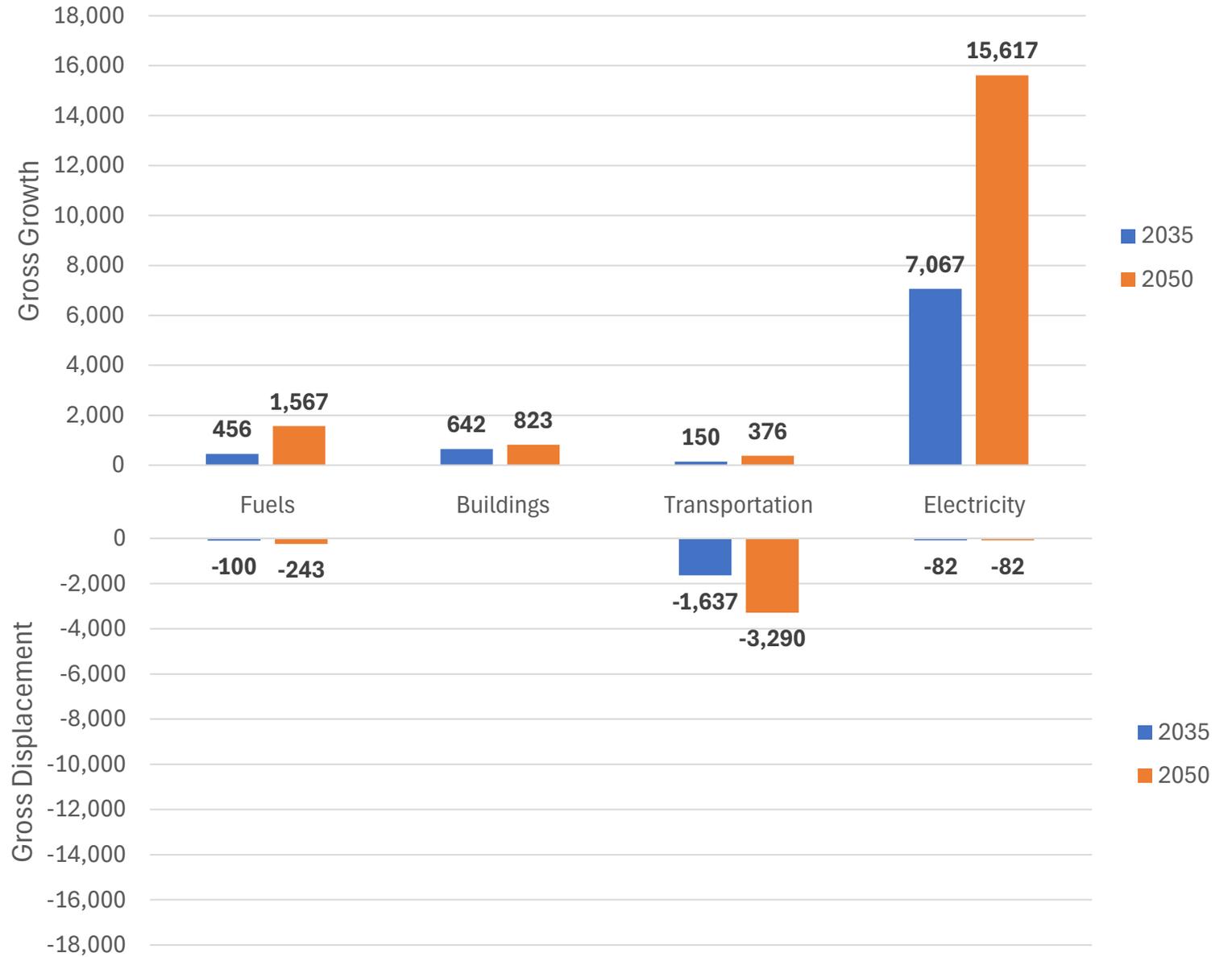
REFERENCE SCENARIO: TOTAL EMPLOYMENT, EAST OREGON



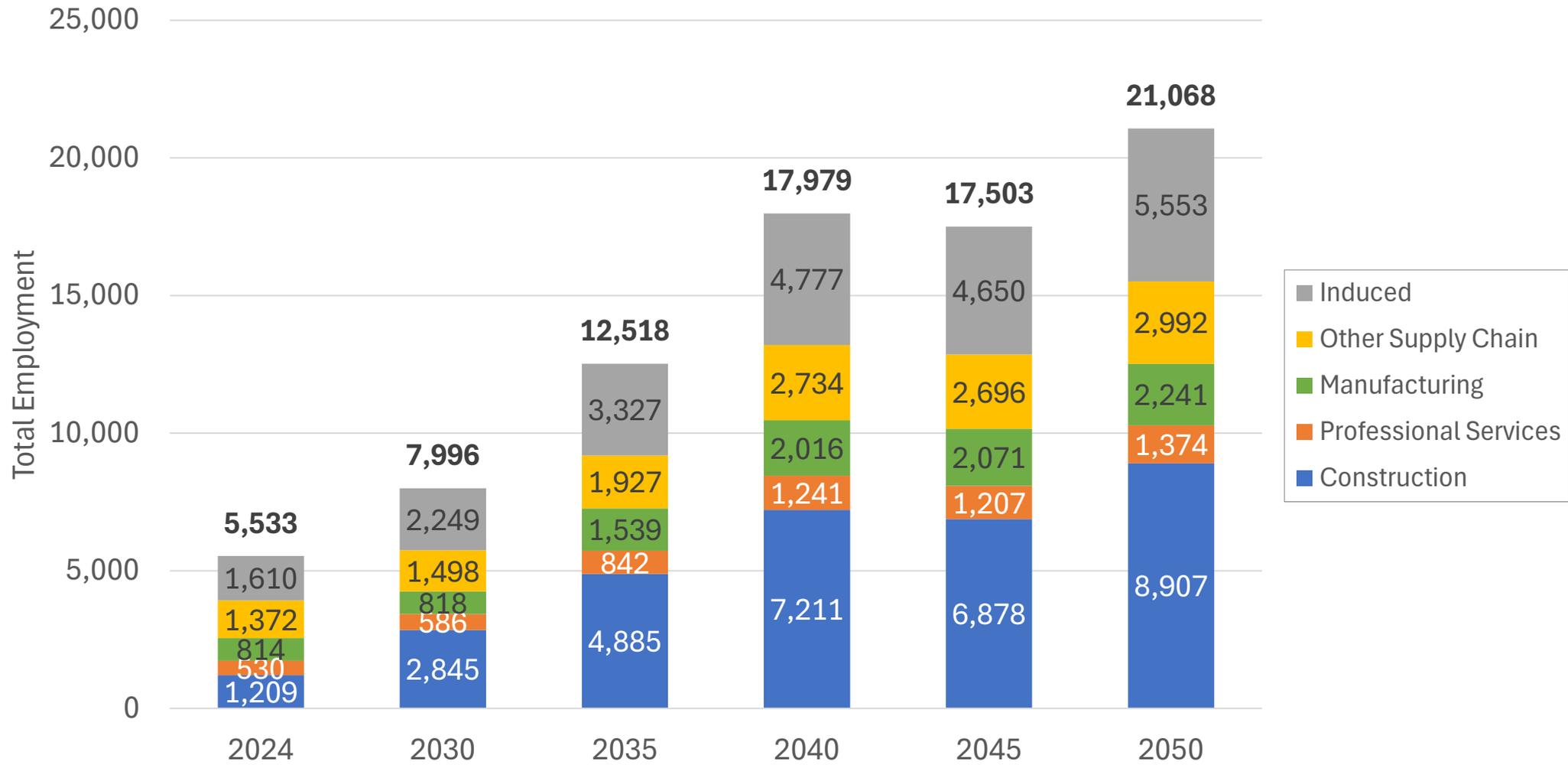
REFERENCE SCENARIO: NET EMPLOYMENT CHANGES FROM 2024, EAST OREGON



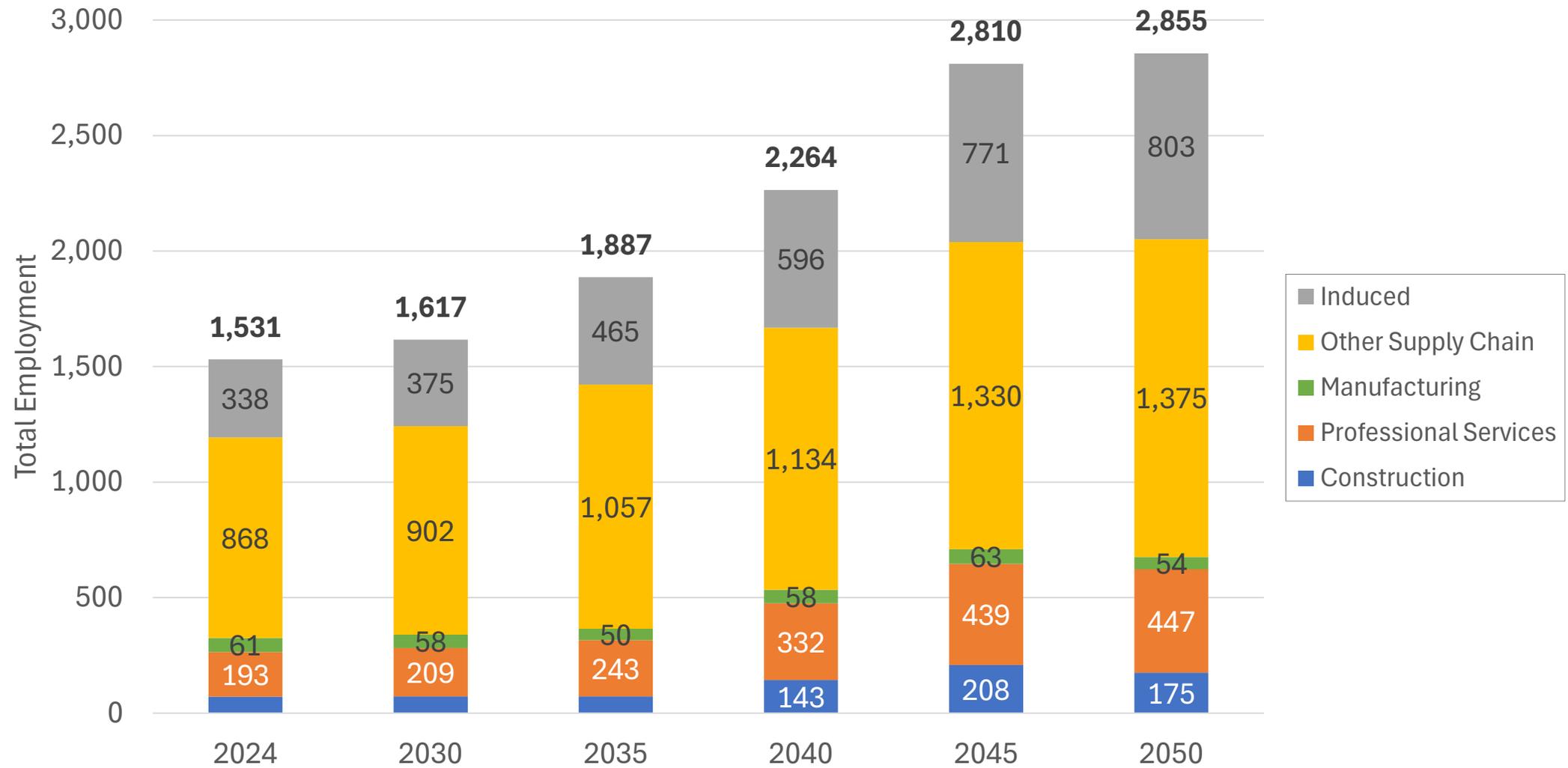
REFERENCE SCENARIO:
**GROSS EMPLOYMENT
 CHANGES FROM 2024,
 EAST OREGON**



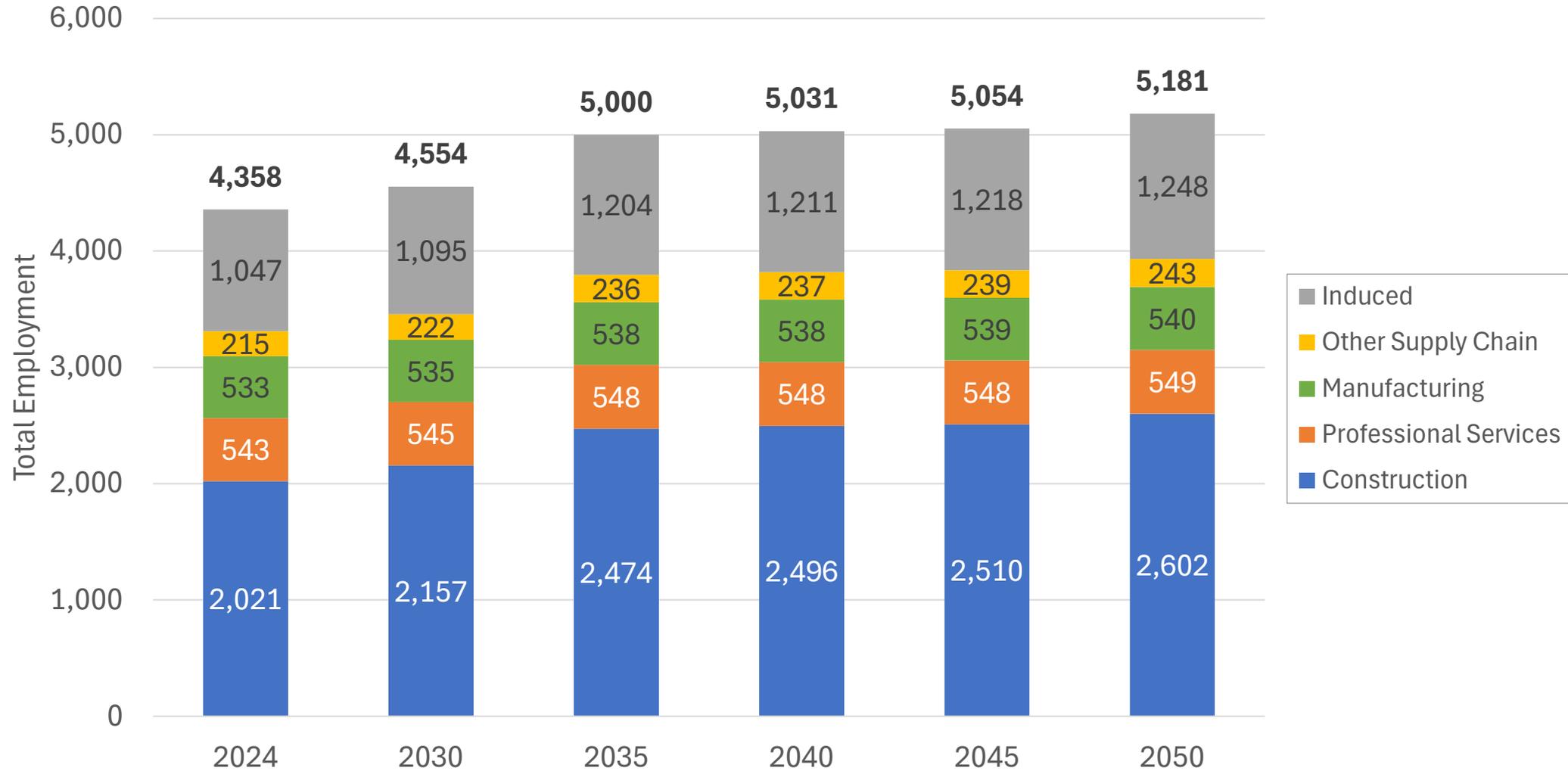
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, ELECTRICITY – TOTALS, EAST OREGON



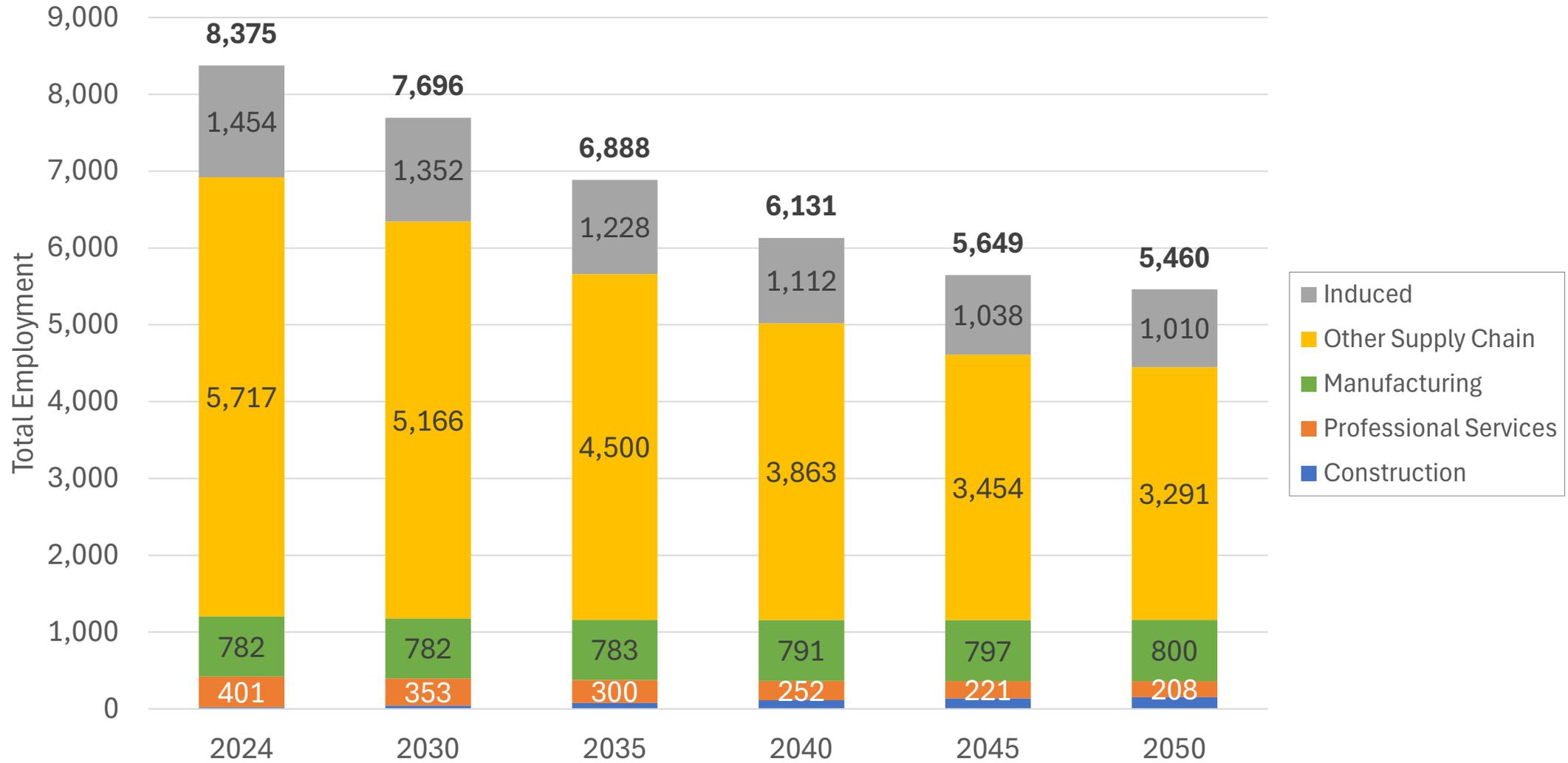
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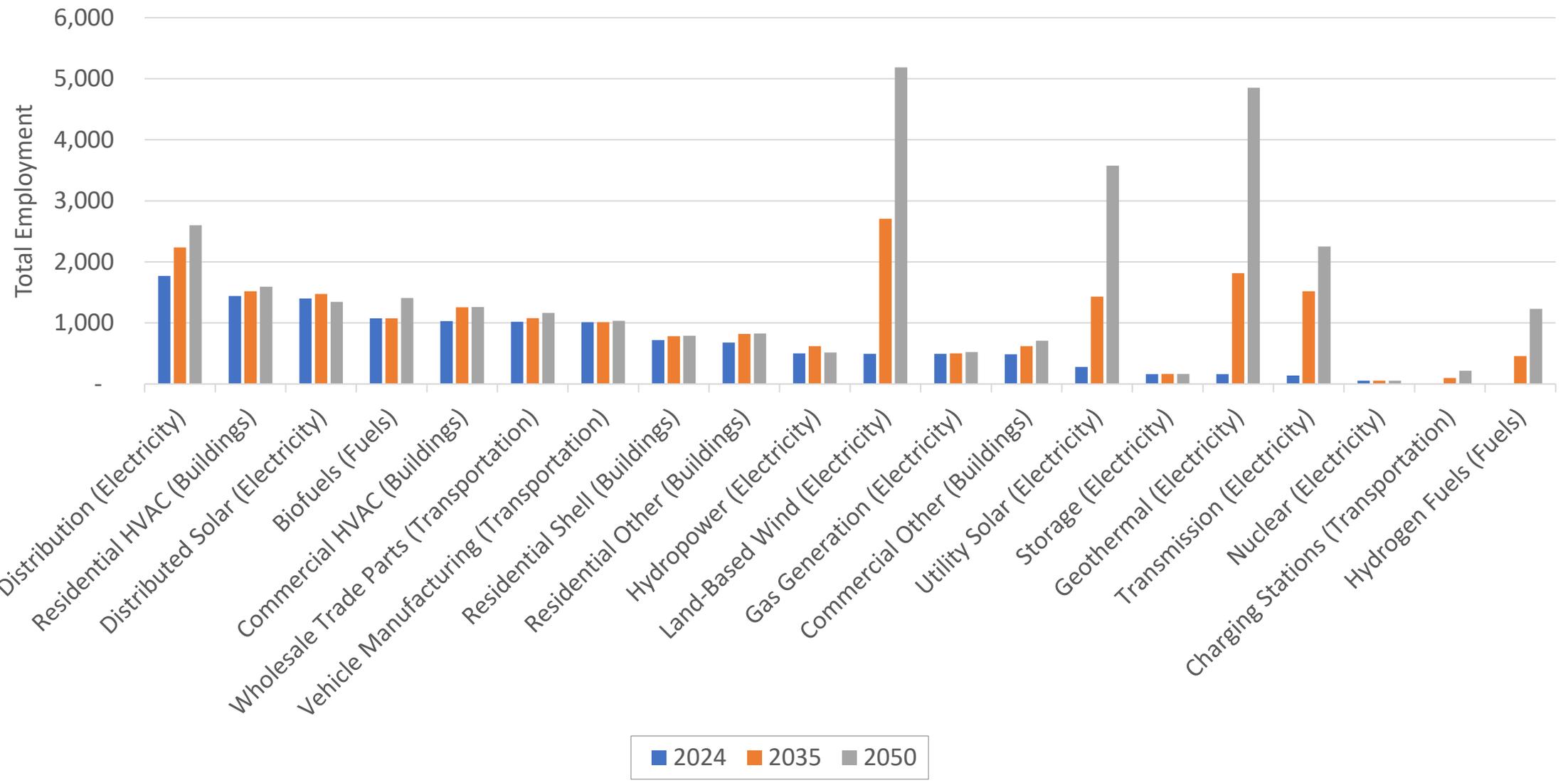
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, BUILDINGS – TOTALS, EAST OREGON



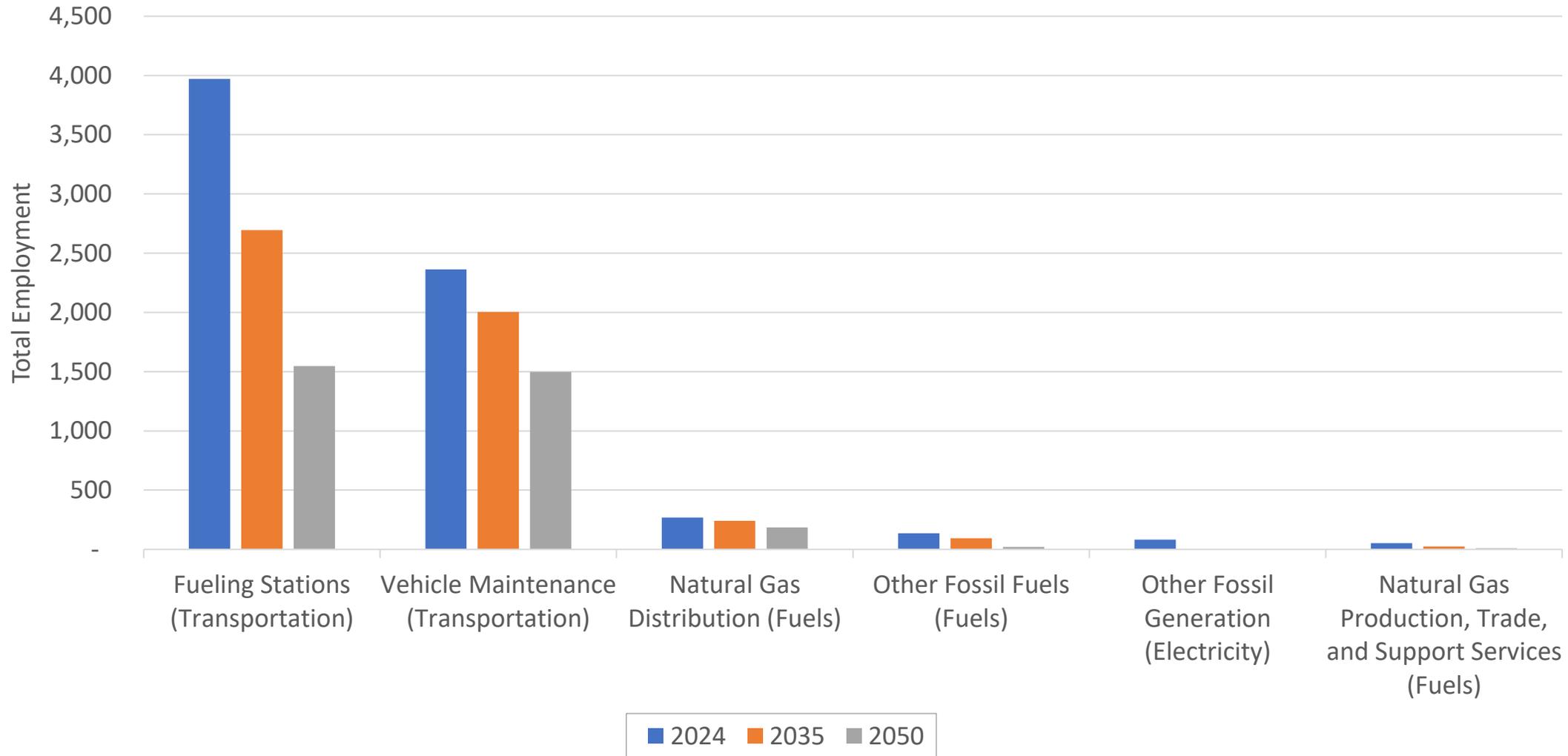
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, TRANSPORTATION – TOTALS, EAST OREGON



REFERENCE SCENARIO: **GROWTH SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050, EAST OREGON**



REFERENCE SCENARIO: **DISPLACED SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050, EAST OREGON**



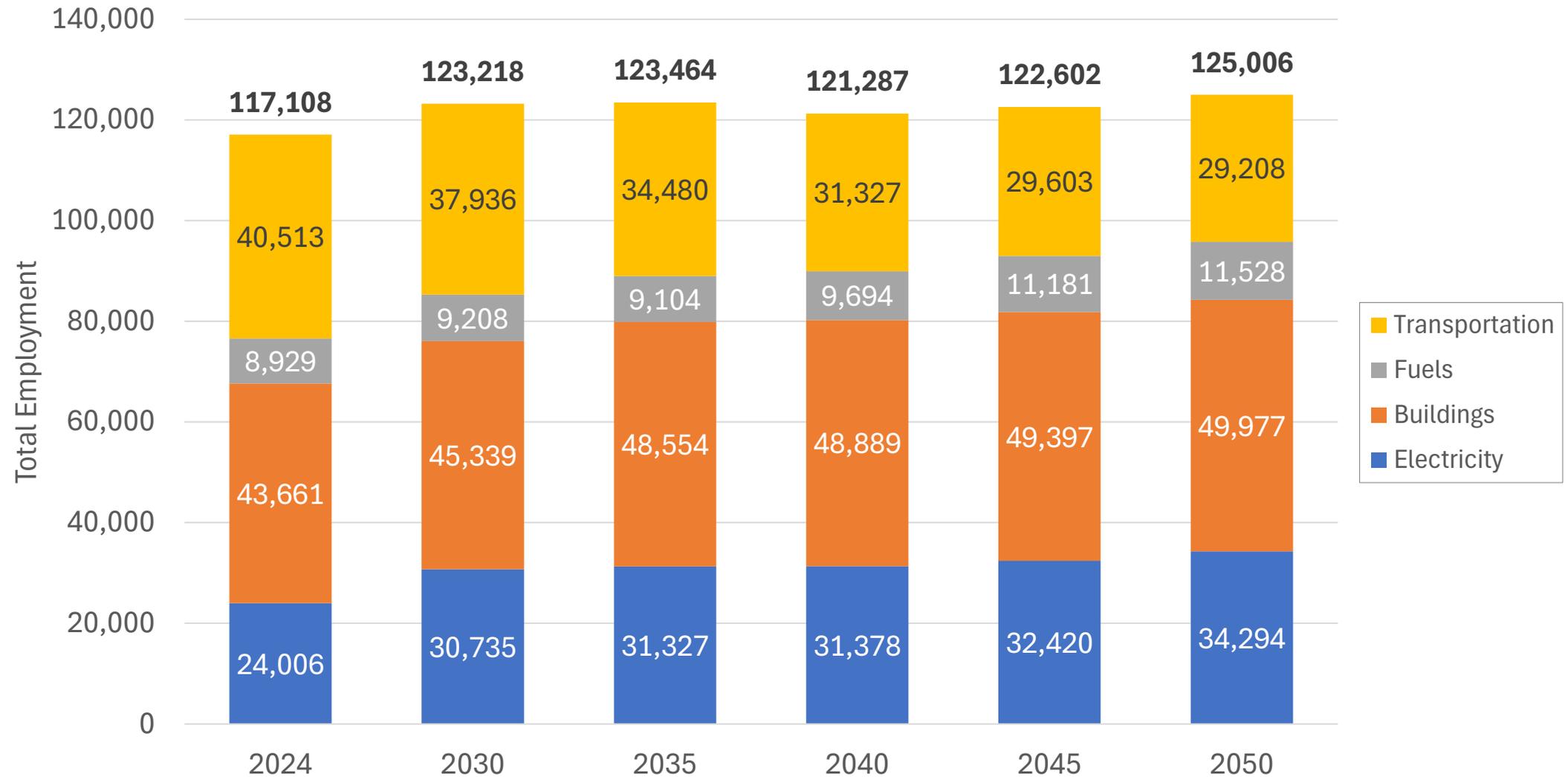


Part 2.3

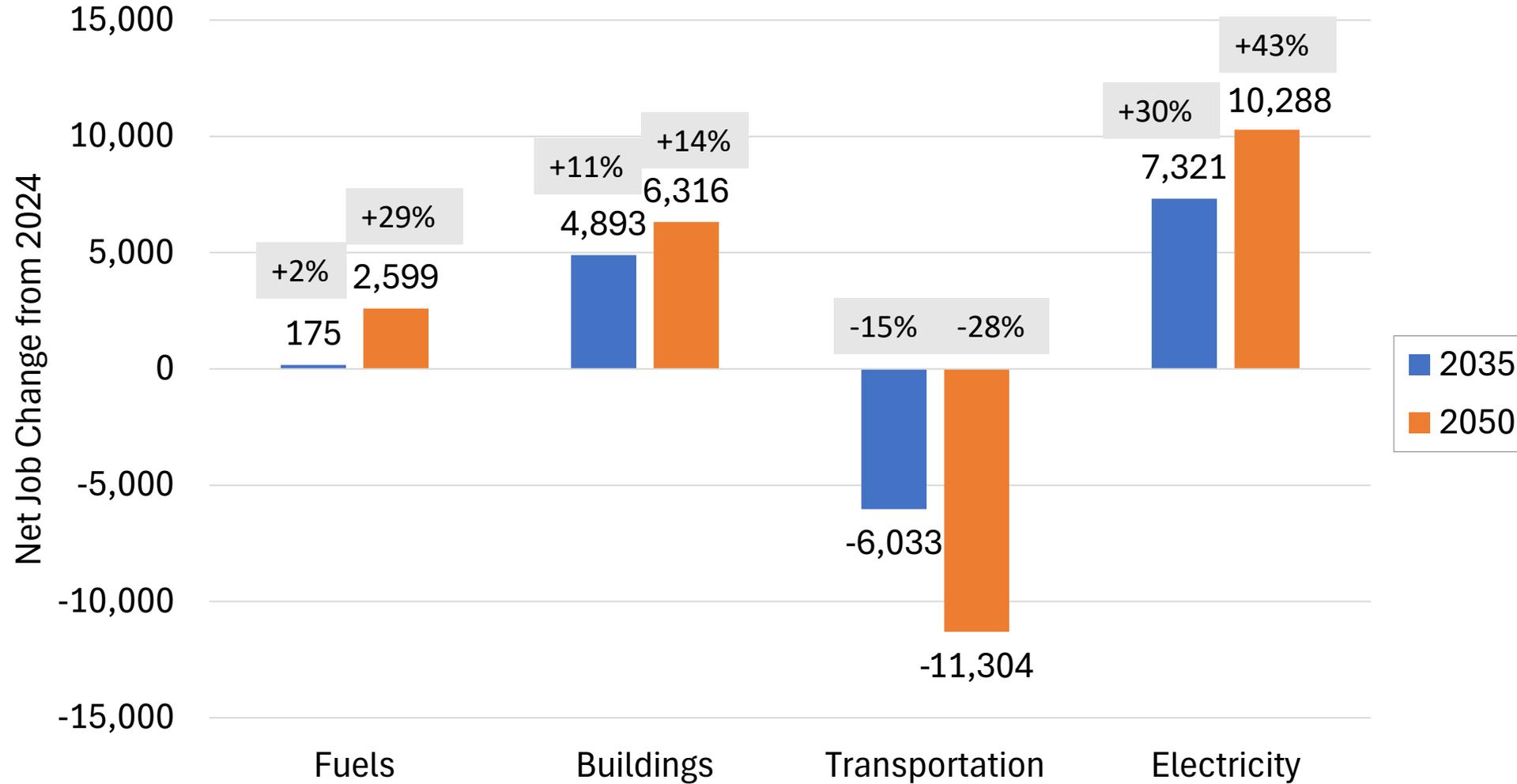
Reference Scenario Key Findings – West Oregon*

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

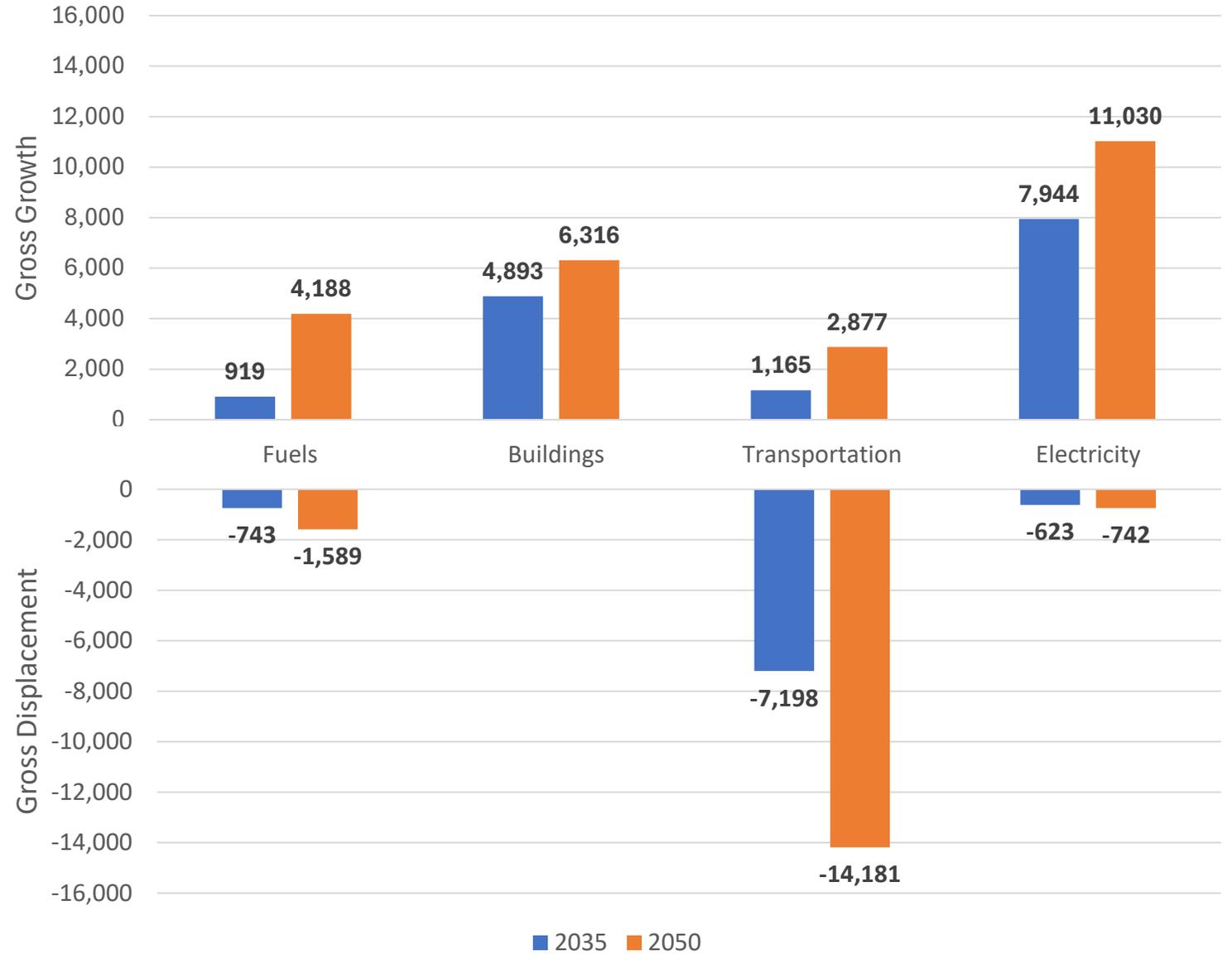
REFERENCE SCENARIO: TOTAL EMPLOYMENT, WEST OREGON



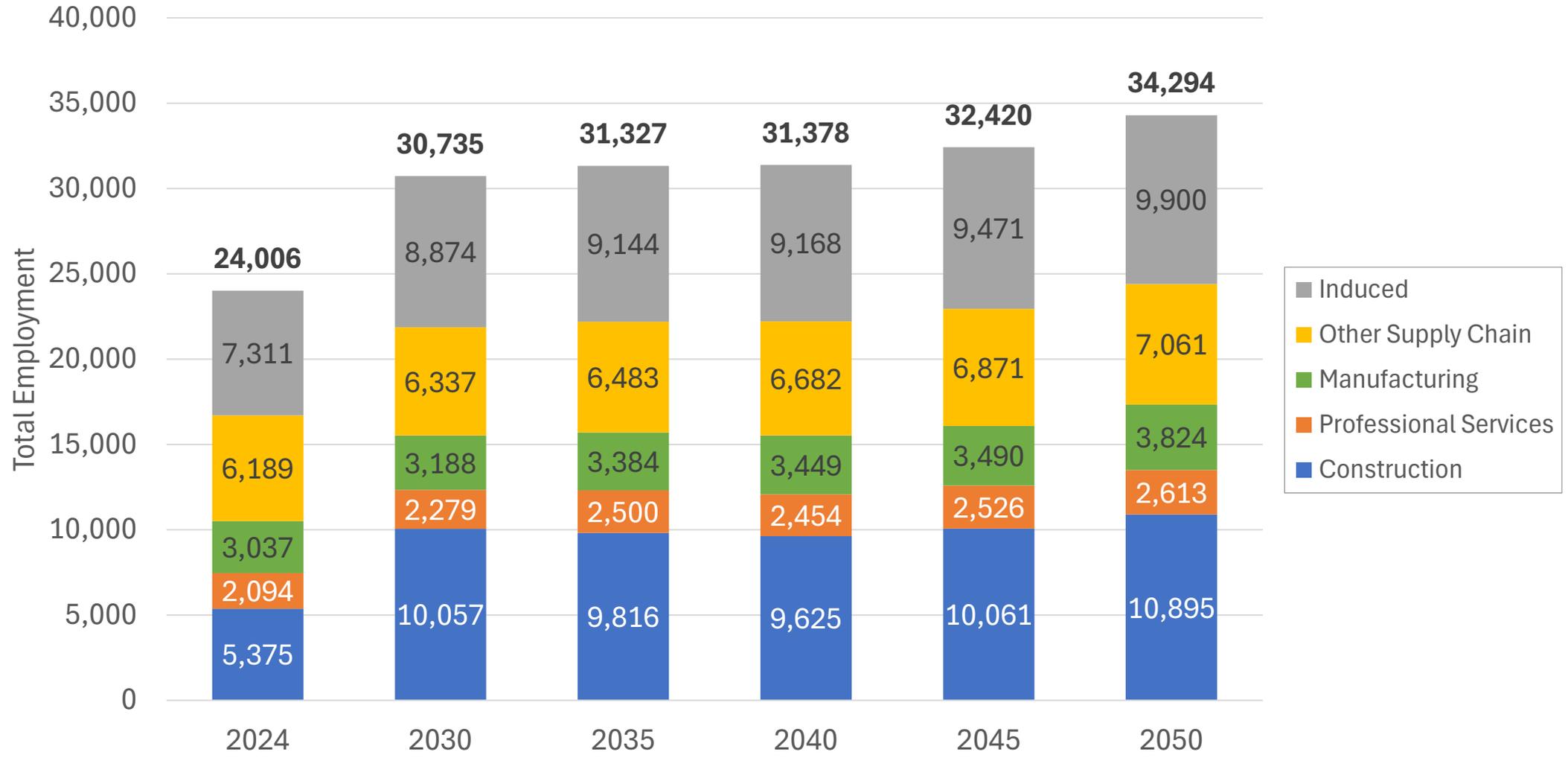
REFERENCE SCENARIO: NET EMPLOYMENT CHANGES FROM 2024, WEST OREGON



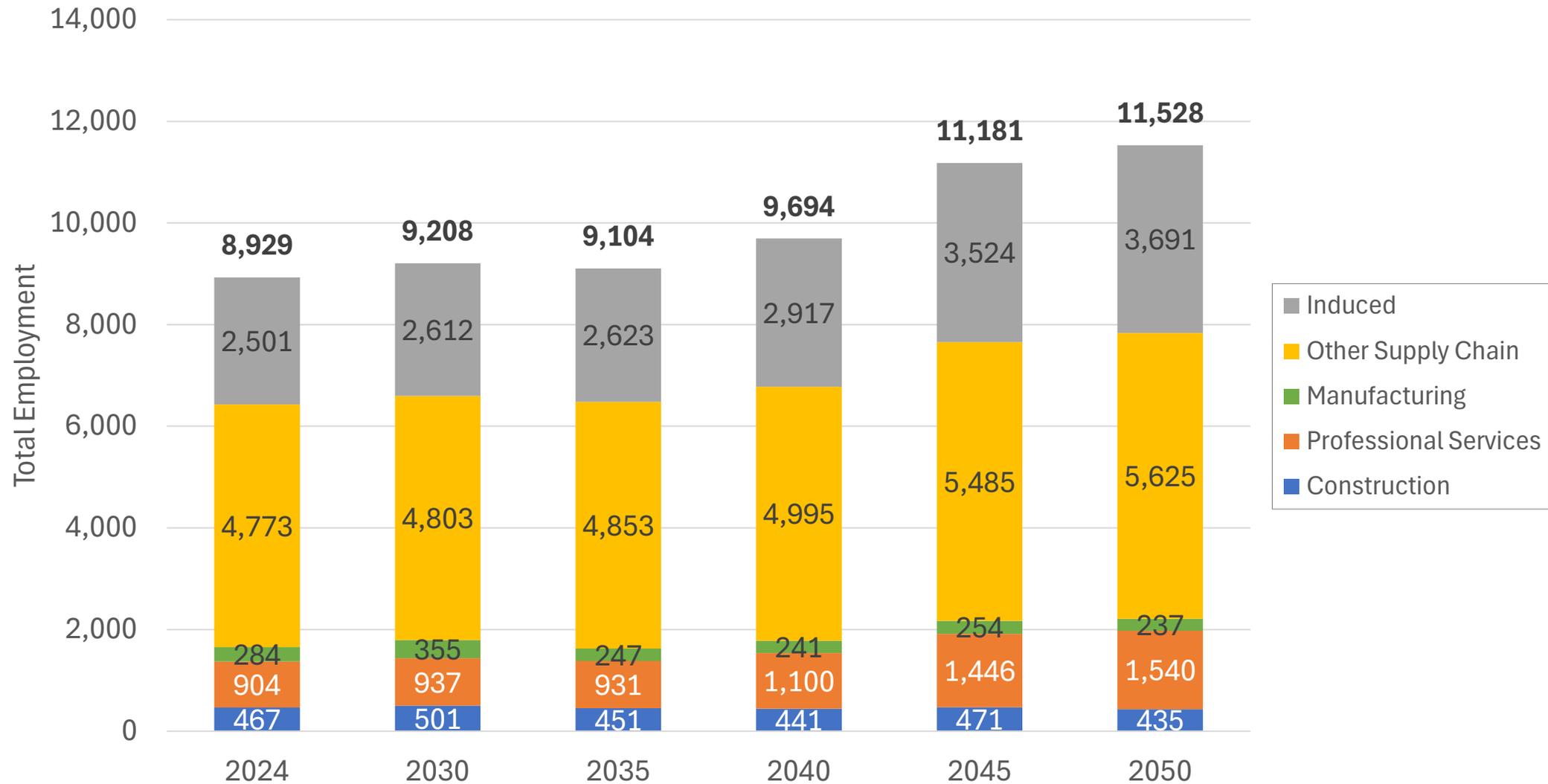
REFERENCE SCENARIO:
**GROSS EMPLOYMENT
 CHANGES FROM 2024,
 WEST OREGON**



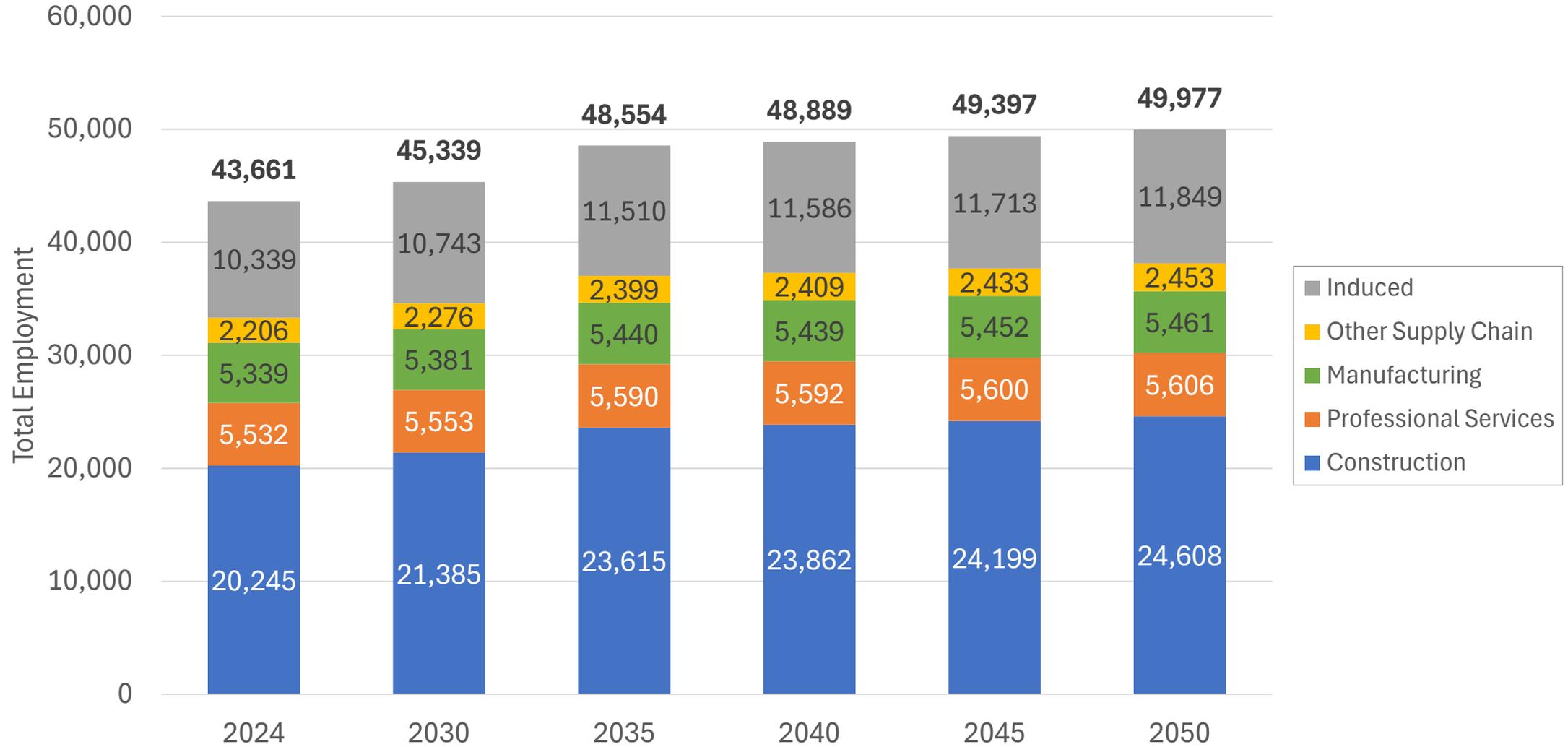
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, ELECTRICITY - TOTALS, WEST OREGON



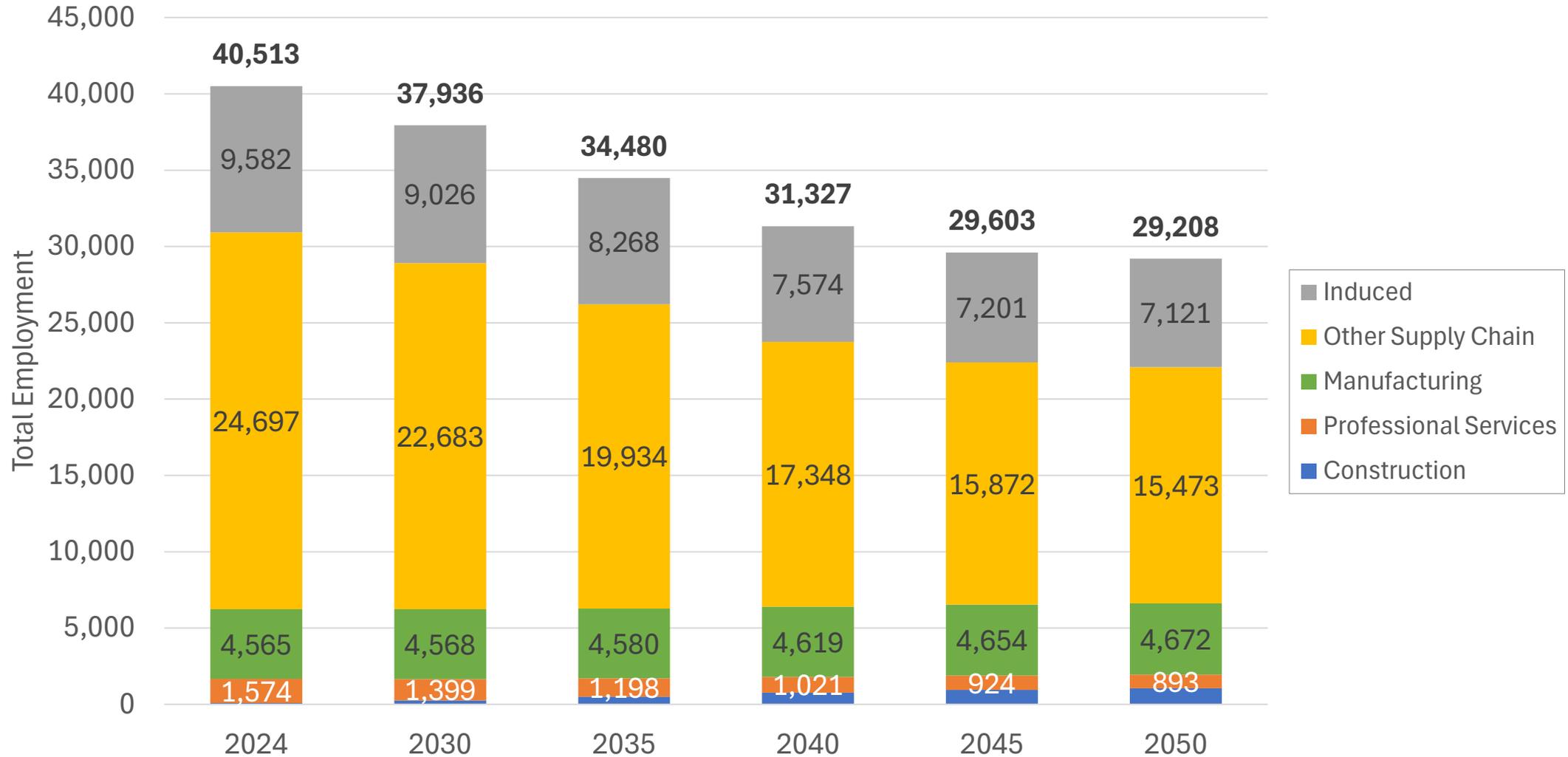
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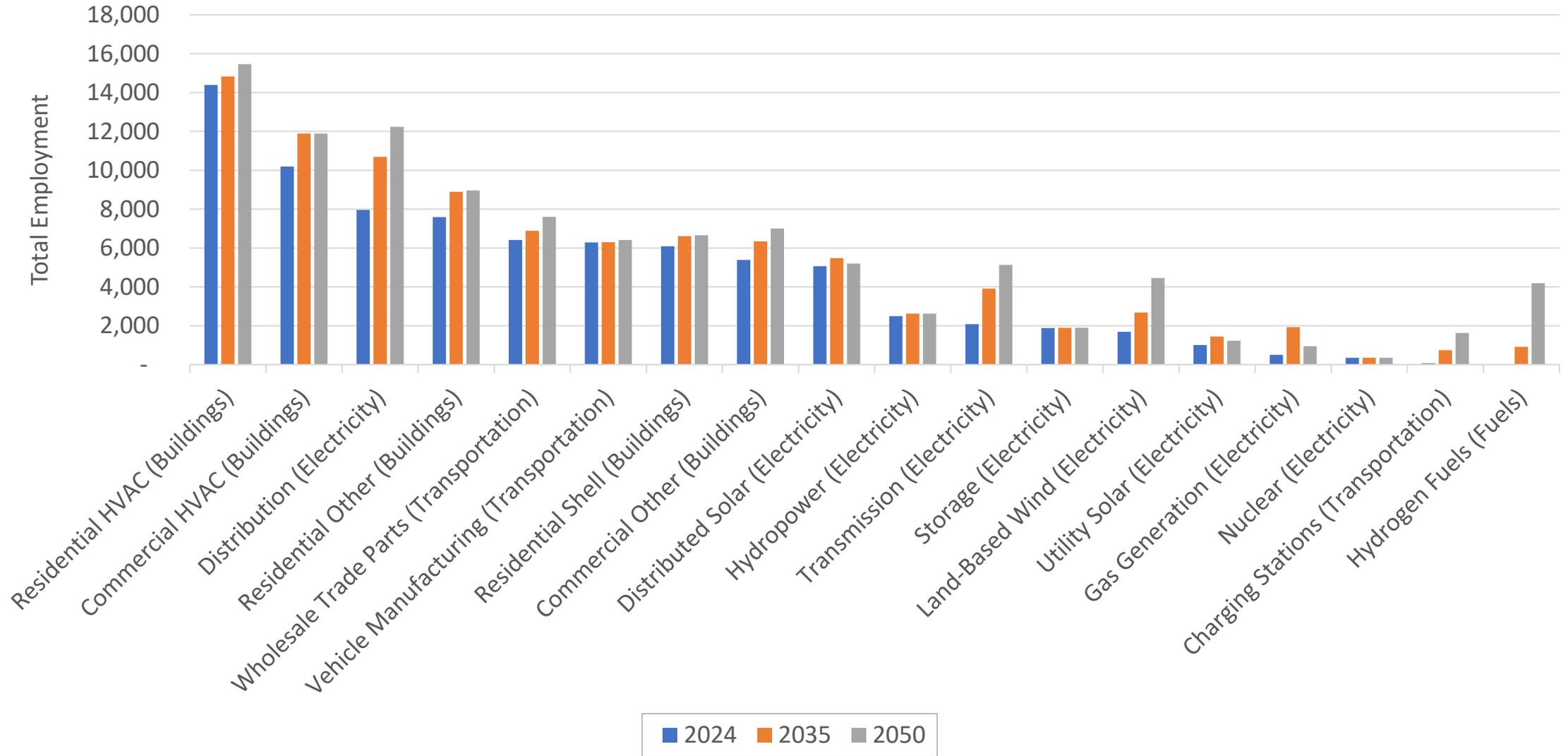
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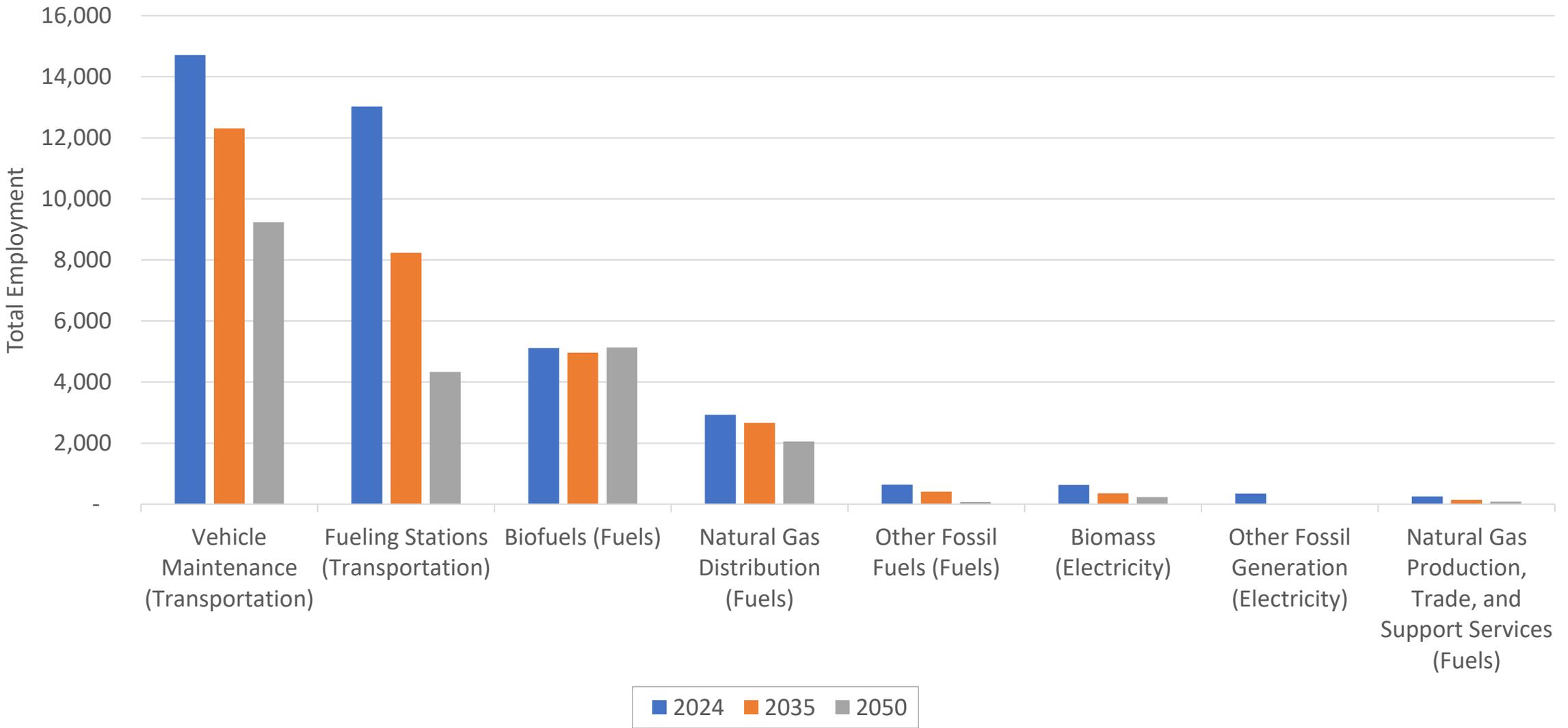
REFERENCE SCENARIO: INITIAL EMPLOYMENT OUTPUTS, TRANSPORTATION – TOTALS, WEST OREGON



REFERENCE SCENARIO: **GROWTH SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050, WEST OREGON**



REFERENCE SCENARIO: **DISPLACED SUBSECTORS EMPLOYMENT IN 2024, 2035, AND 2050, WEST OREGON**





Part 3

Reference Scenario Initial Employment Outputs (IEOs)

**Part 3:
Initial
Employment
Outputs

Electricity**

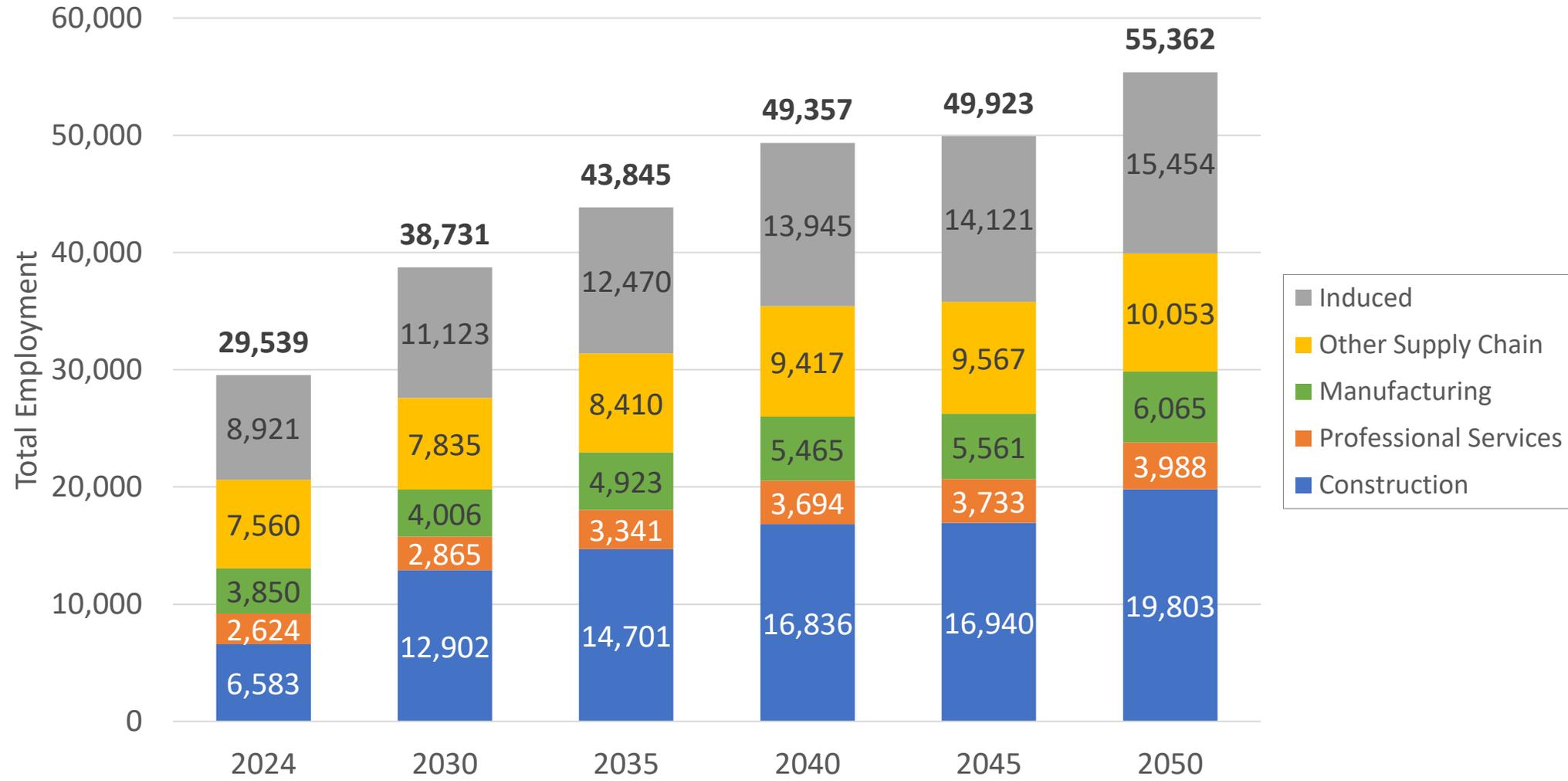
II. Electricity

- 1. Distributed Solar**
- 2. Distribution**
- 3. Hydropower**
- 4. Land-Based Wind**
- 5. Gas Generation**
- 6. Nuclear**
- 7. Other Fossil Generation**
- 8. Other Renewable Generation - Biomass**
- 9. Other Renewable Generation - Geothermal**
- 10. Storage**
- 11. Transmission**
- 12. Utility Solar**

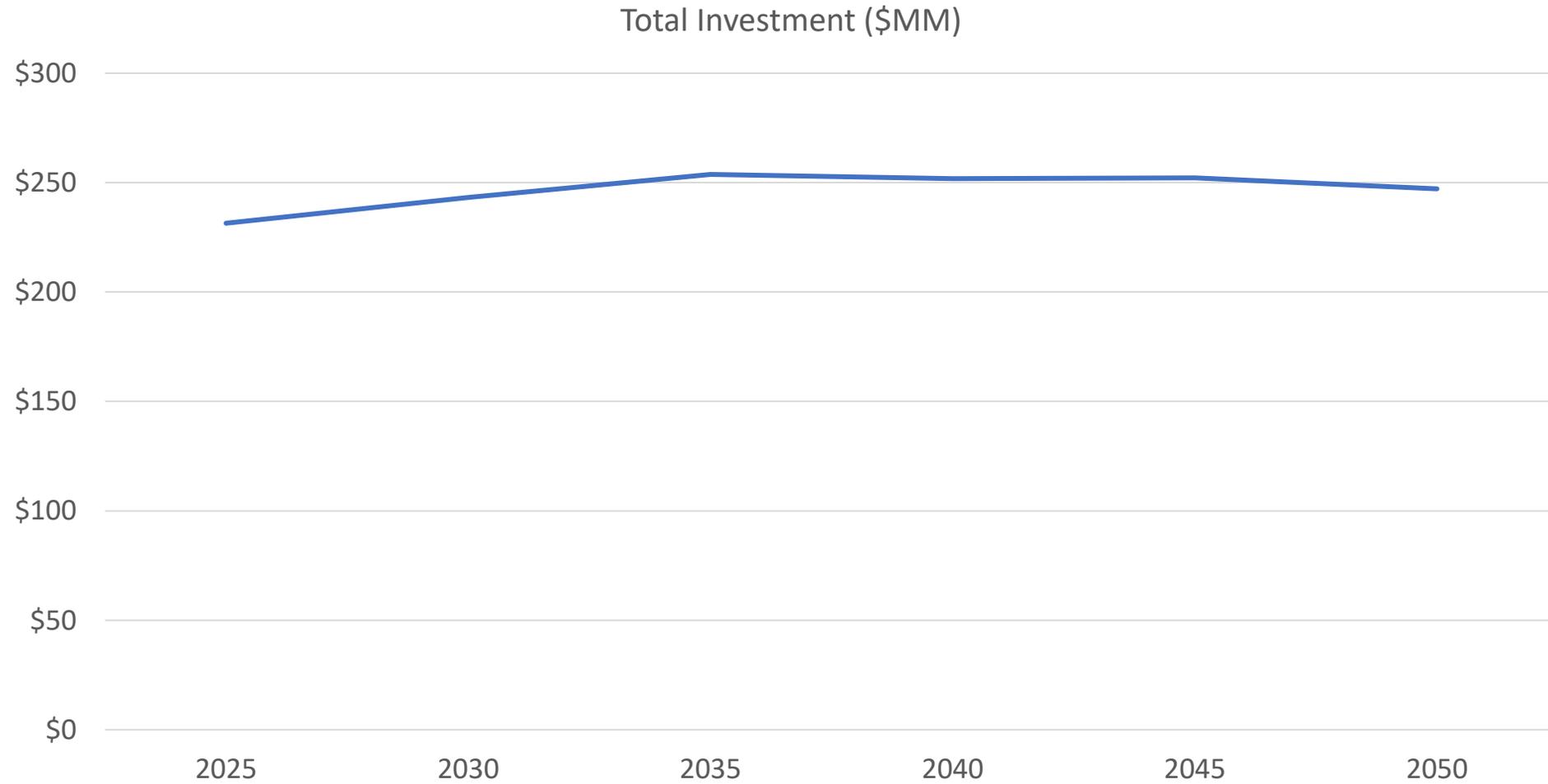
ELECTRICITY: REFERENCE, OREGON

SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Distribution	9,728	12,300	12,921	13,677	14,392	14,831
Hydropower	2,995	3,738	3,240	3,134	3,133	3,133
Land-Based Wind	2,188	2,647	5,380	7,236	7,811	9,643
Gas Generation	990	990	2,433	1,597	1,781	1,471
Nuclear	401	401	401	401	401	401
Other Ren. Gen. – Geothermal	160	161	1,814	5,791	4,142	4,853
Storage	2,045	2,124	2,055	2,054	2,050	2,061
Transmission	2,220	4,381	5,427	5,454	6,135	7,391
Utility Solar	1,288	4,868	2,872	2,843	3,089	4,802
Distributed Solar	6,469	6,729	6,950	6,818	6,756	6,544
Sub-total	28,482	38,339	43,493	49,004	49,691	55,129
Change		9,856	15,011	20,522	21,208	26,646
Displacement Sub-Sectors						
Other Fossil Generation	427	41	0	0	0	0
Other Ren. Gen. – Biomass	630	352	352	353	232	233
Sub-total	1,057	393	352	353	232	233
Change		-664	-705	-704	-825	-824
Electricity OVERALL	29,539	38,731	43,845	49,357	49,923	55,362
Net Change from 2024		9,192	14,306	19,818	20,384	25,823

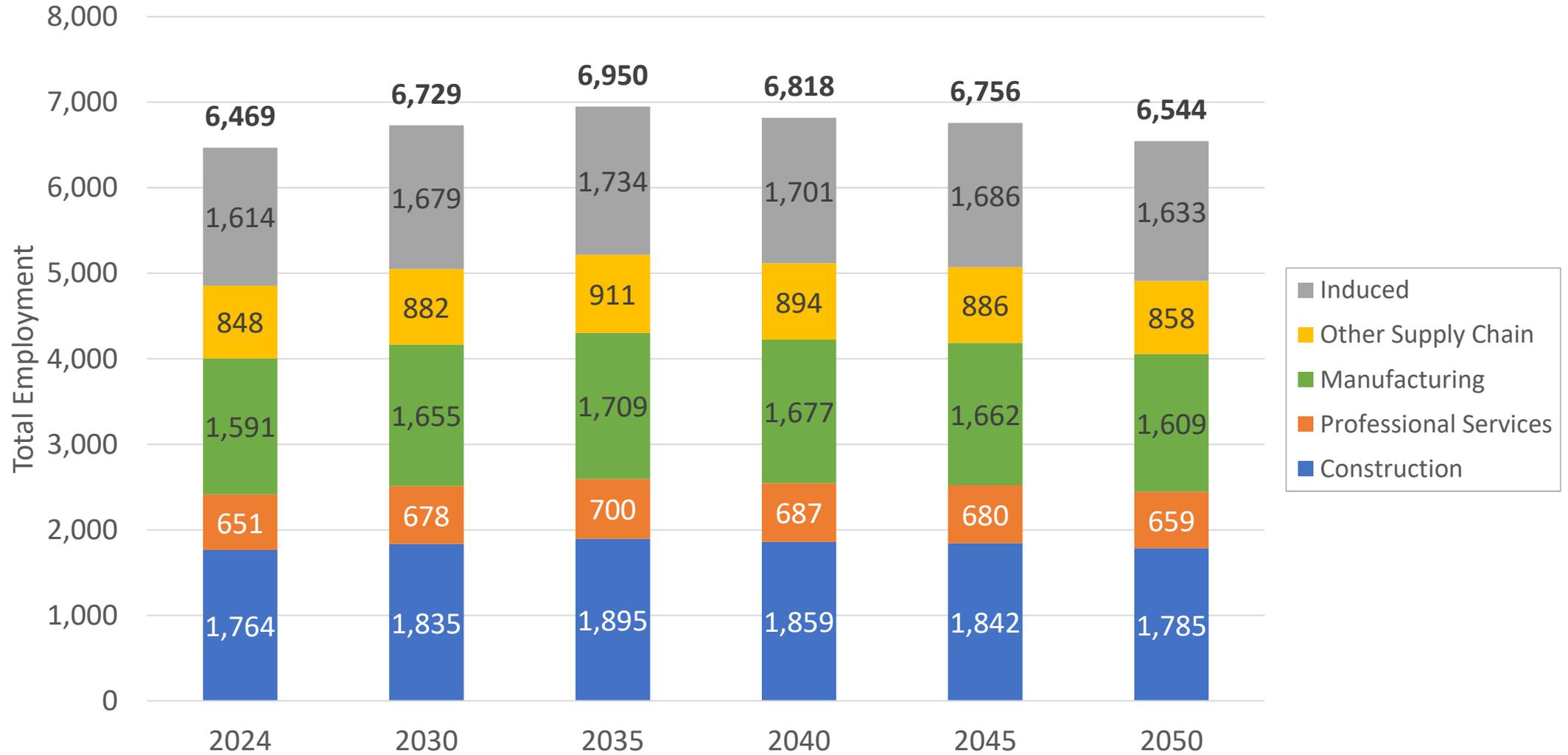
REFERENCE SCENARIO OUTPUTS, **ELECTRICITY – TOTALS**, OREGON



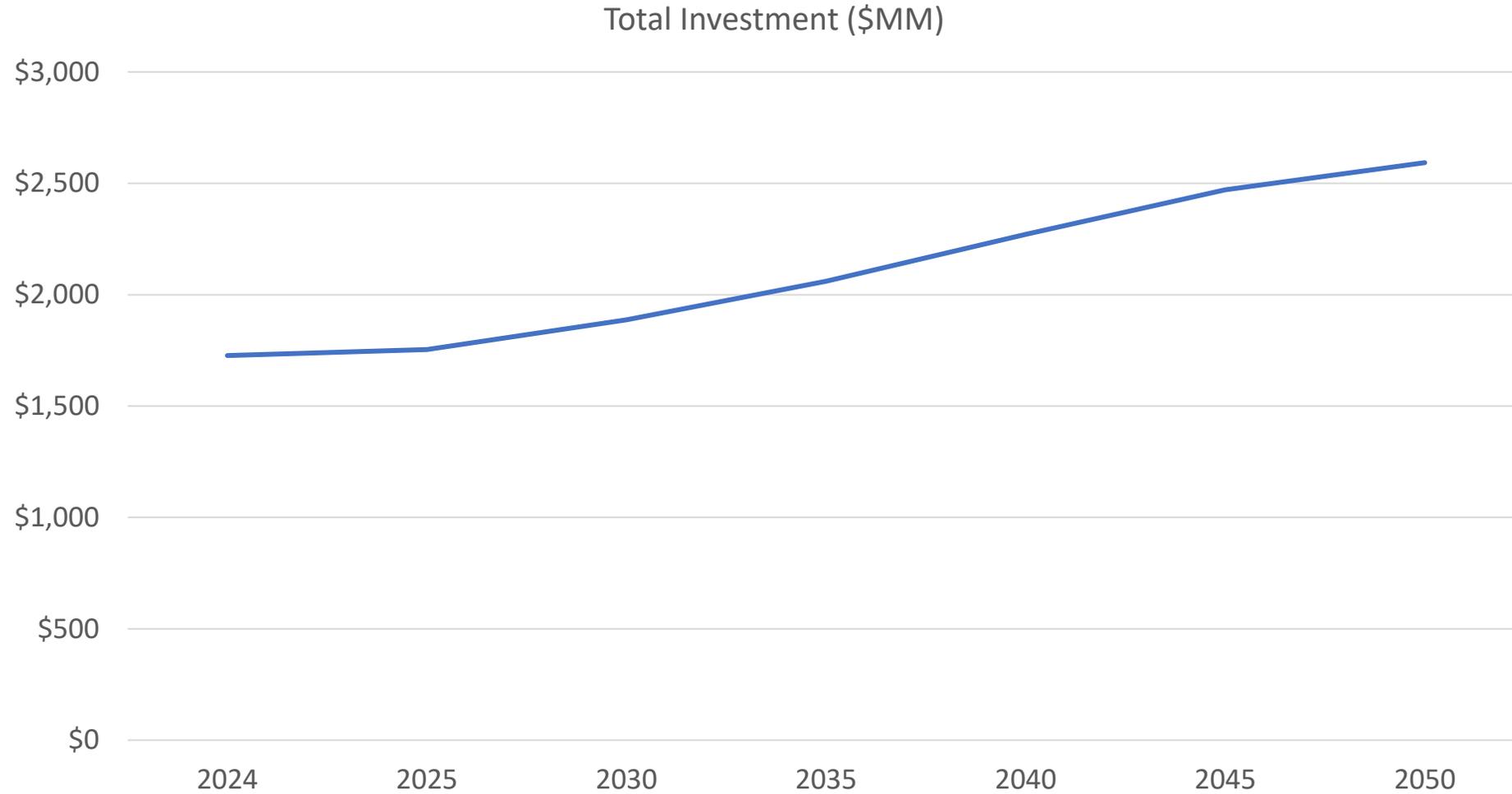
REFERENCE SCENARIO INPUTS, DISTRIBUTED SOLAR PV, OREGON



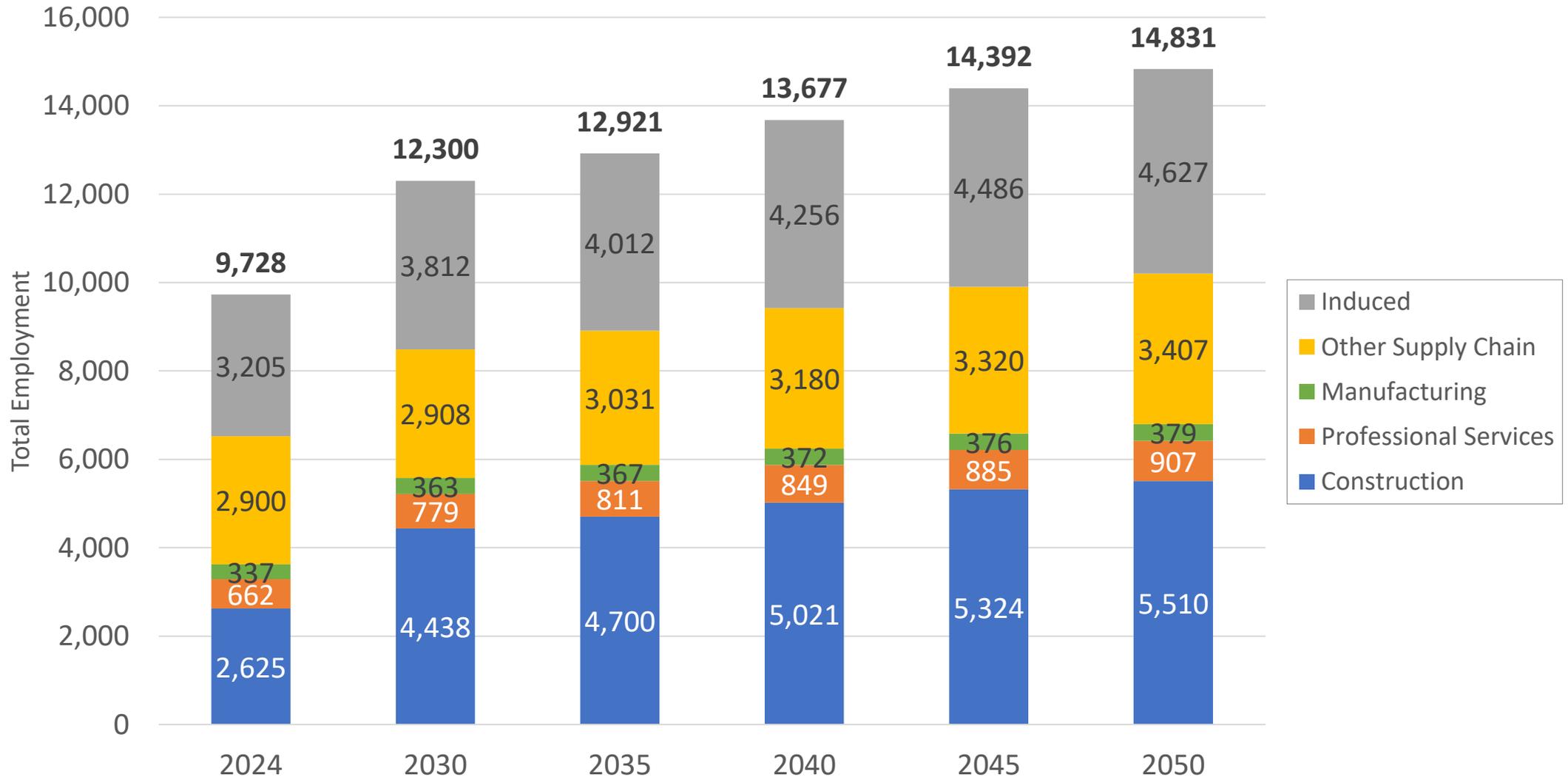
REFERENCE SCENARIO OUTPUTS, DISTRIBUTED SOLAR PV, OREGON



REFERENCE SCENARIO INPUTS, DISTRIBUTION, OREGON

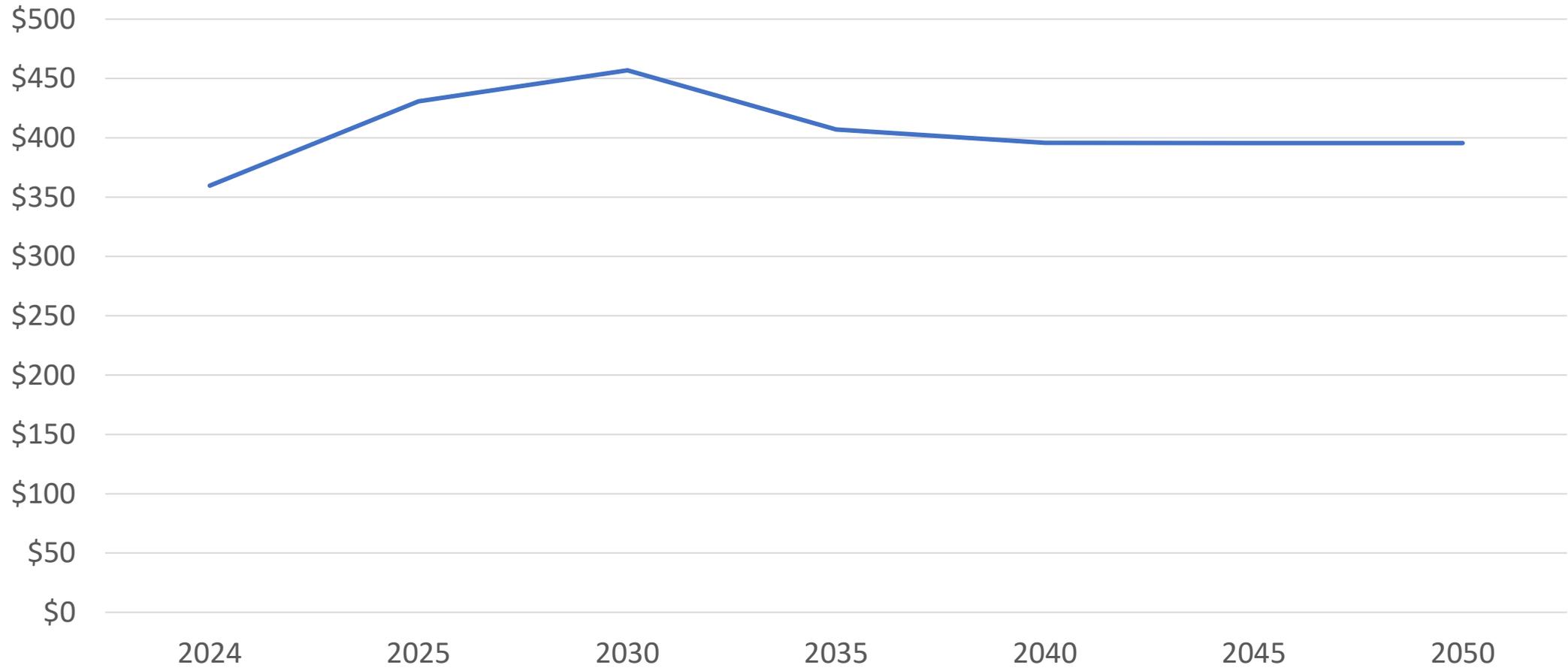


REFERENCE SCENARIO **OUTPUTS, DISTRIBUTION, OREGON**

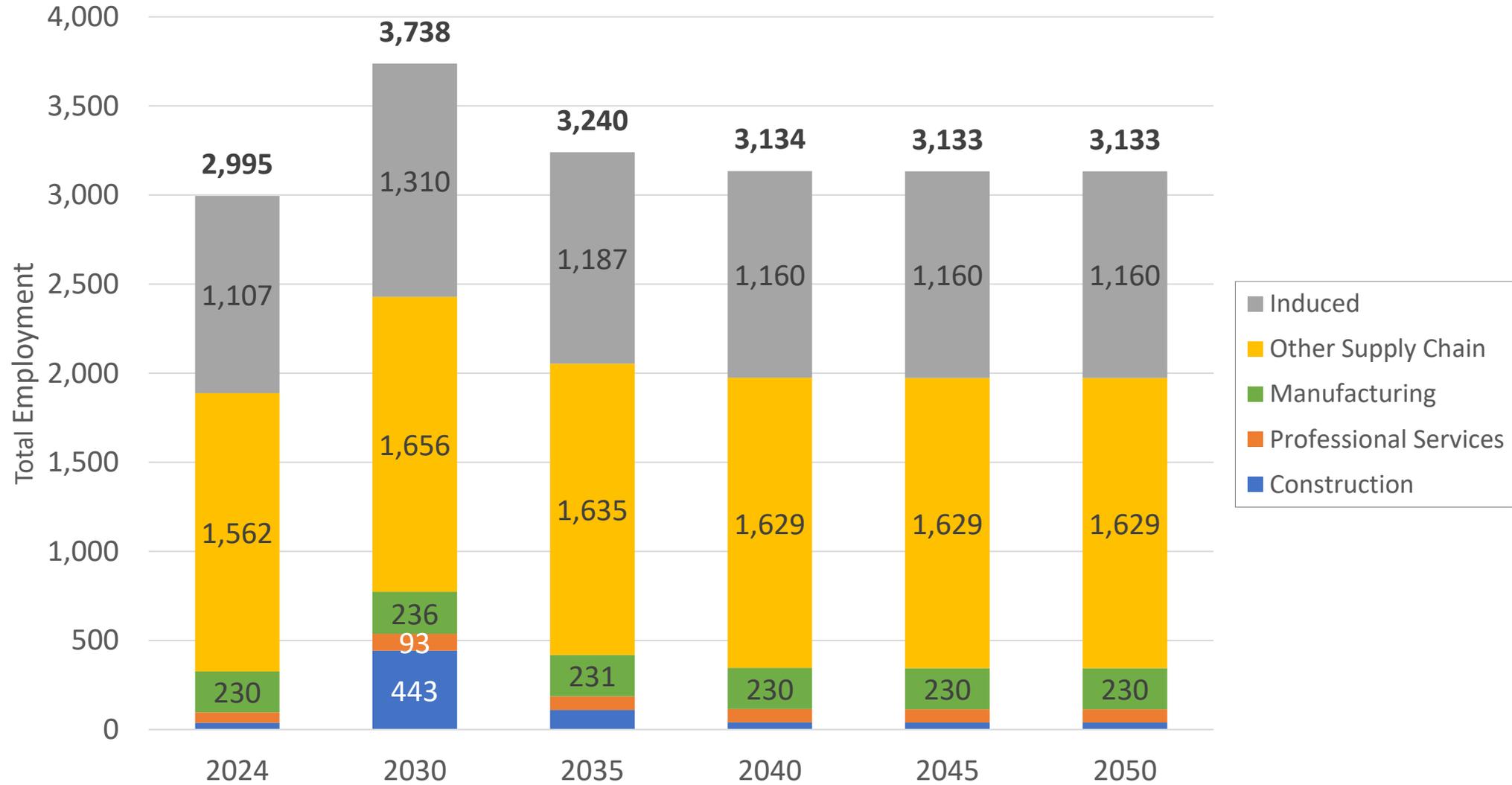


REFERENCE SCENARIO INPUTS, HYDROPOWER, OREGON

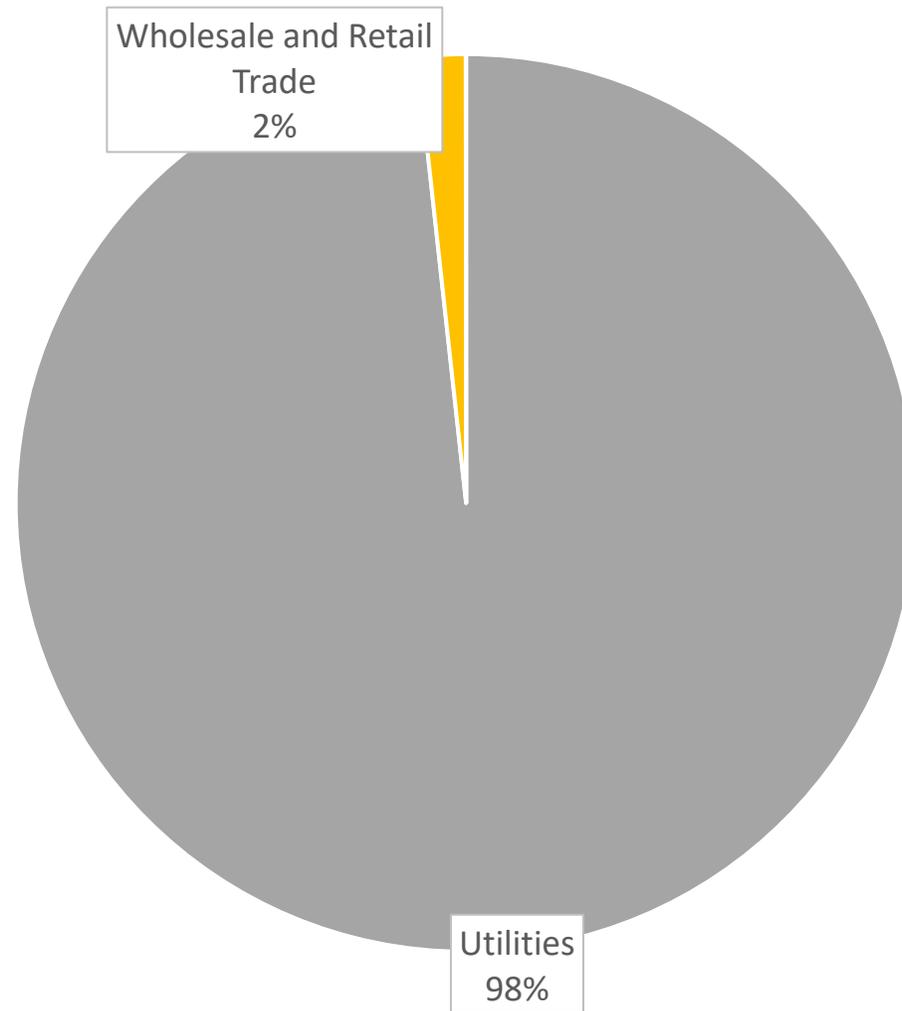
Total Investment (\$MM)



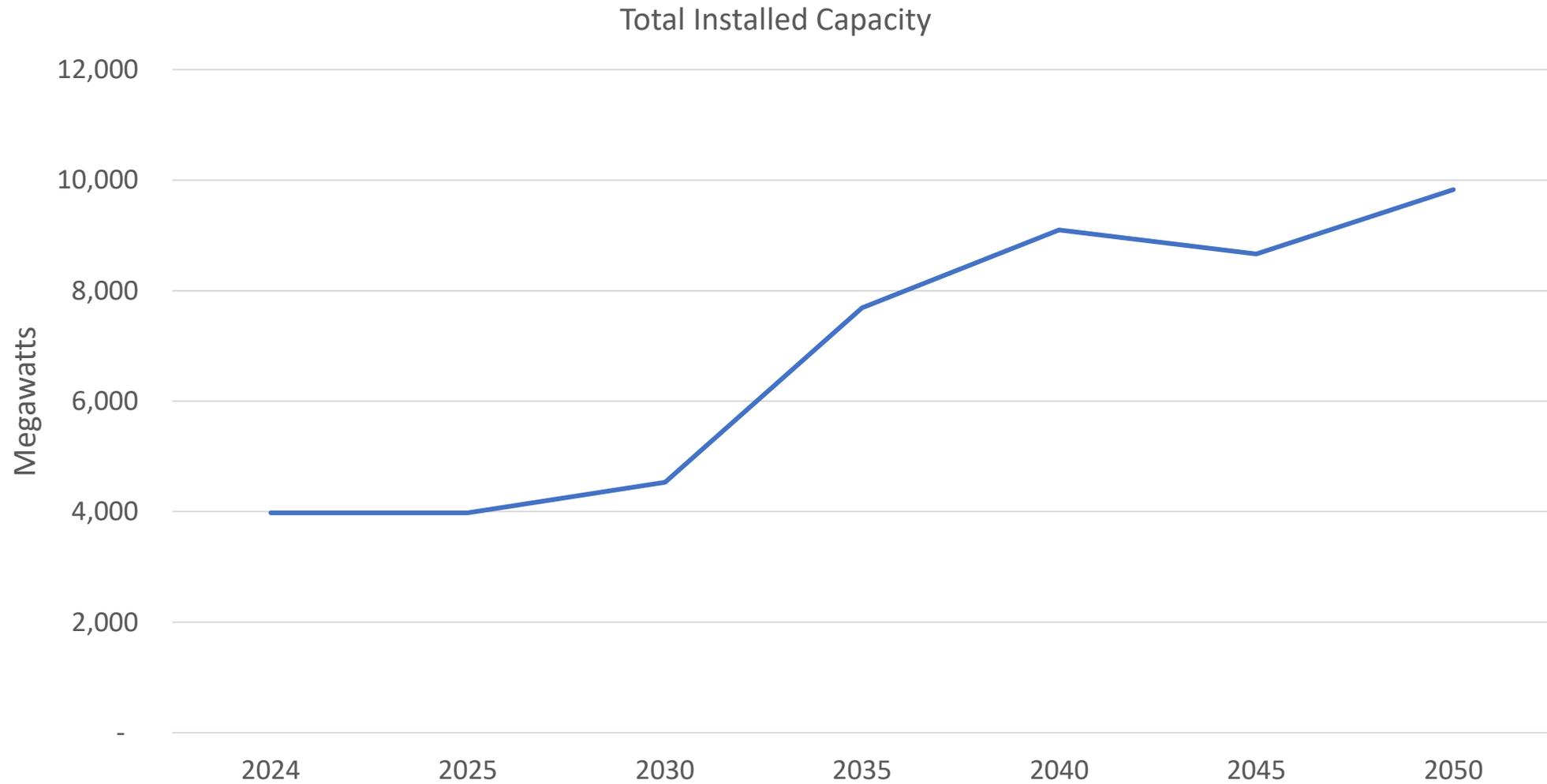
REFERENCE SCENARIO **OUTPUTS, HYDROPOWER, OREGON**



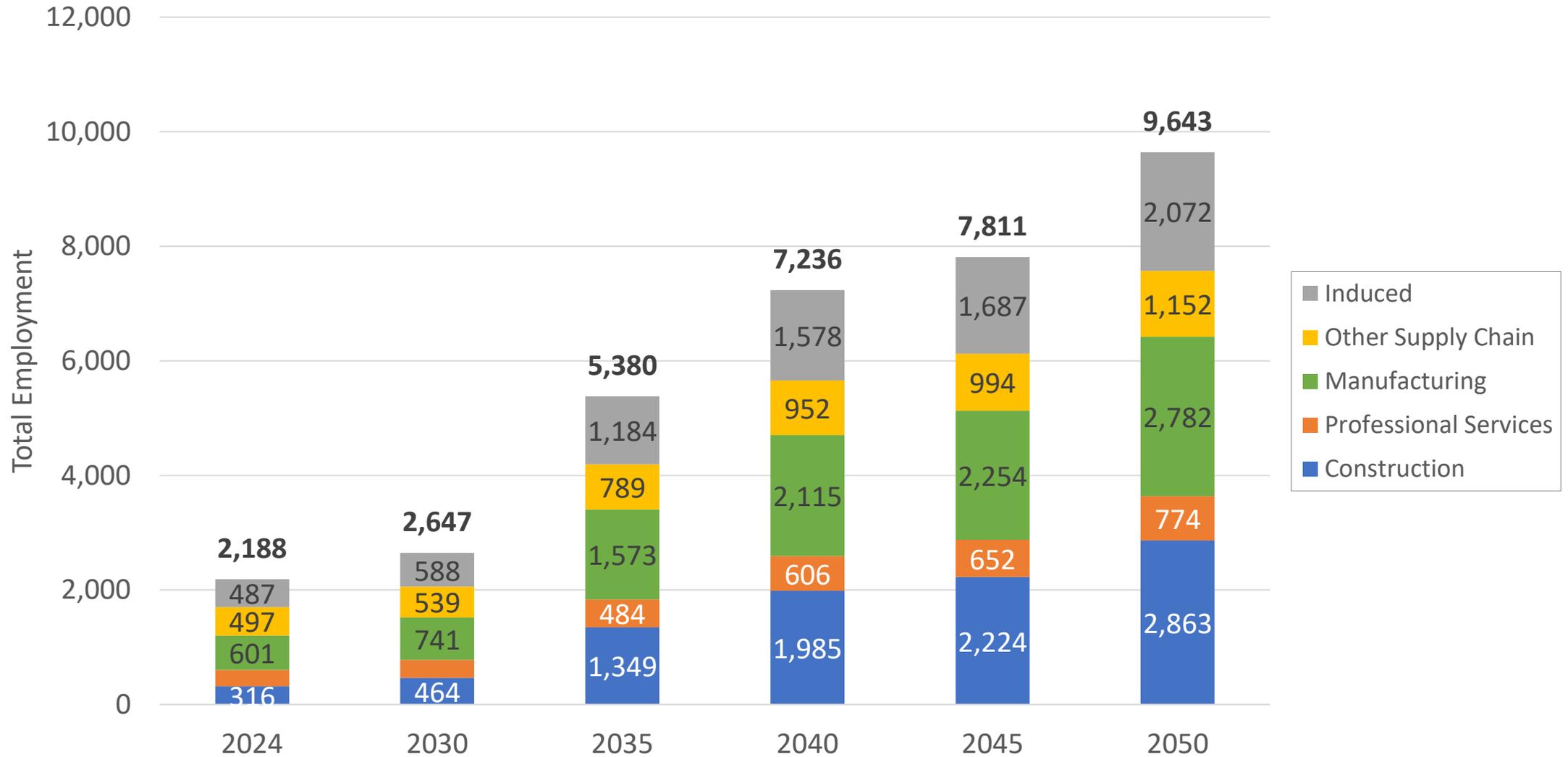
OTHER SUPPLY CHAIN BREAKOUT, **HYDROPOWER**, OREGON



REFERENCE SCENARIO INPUTS, LAND-BASED WIND, OREGON

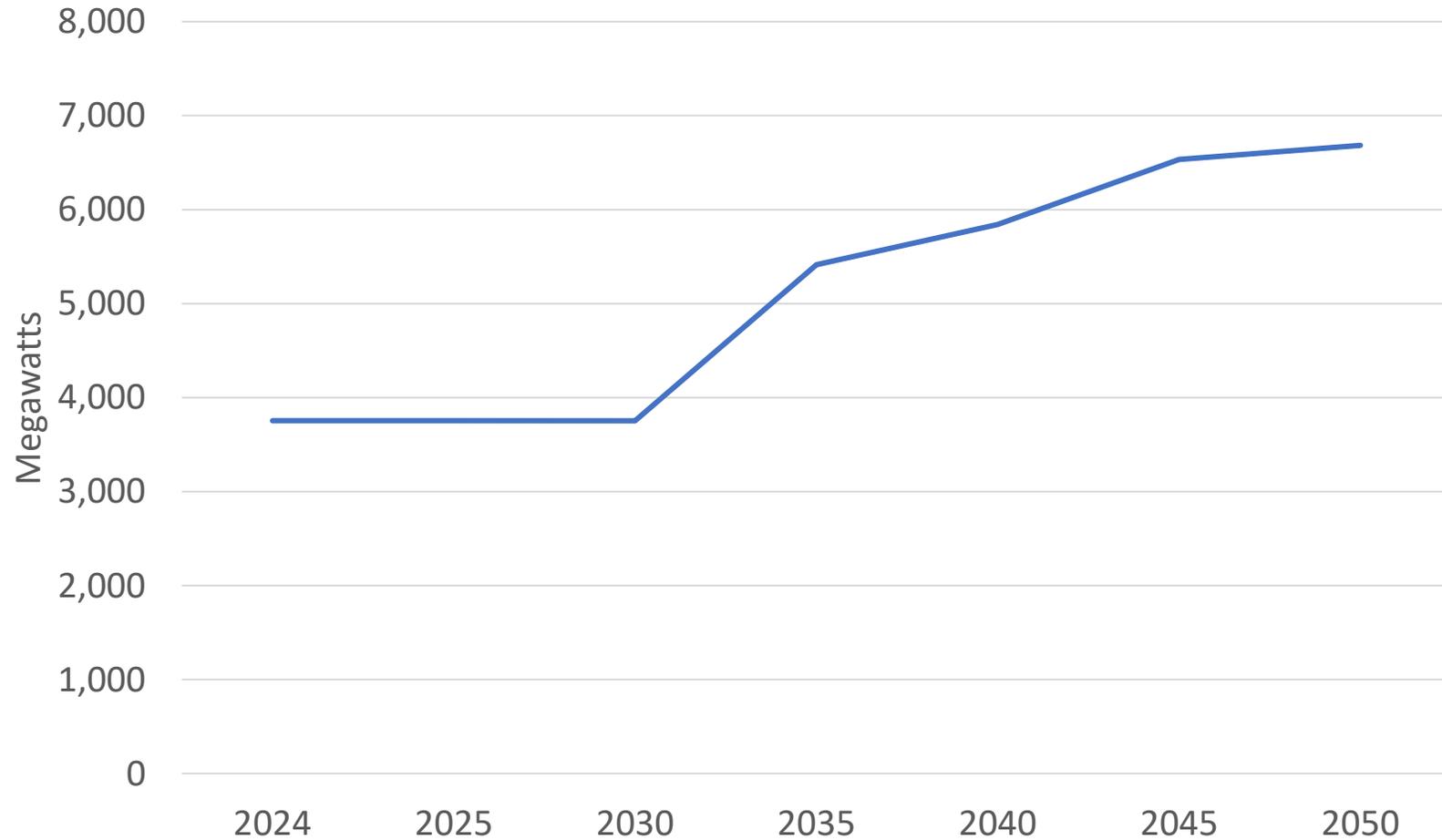


REFERENCE SCENARIO OUTPUTS, LAND-BASED WIND, OREGON



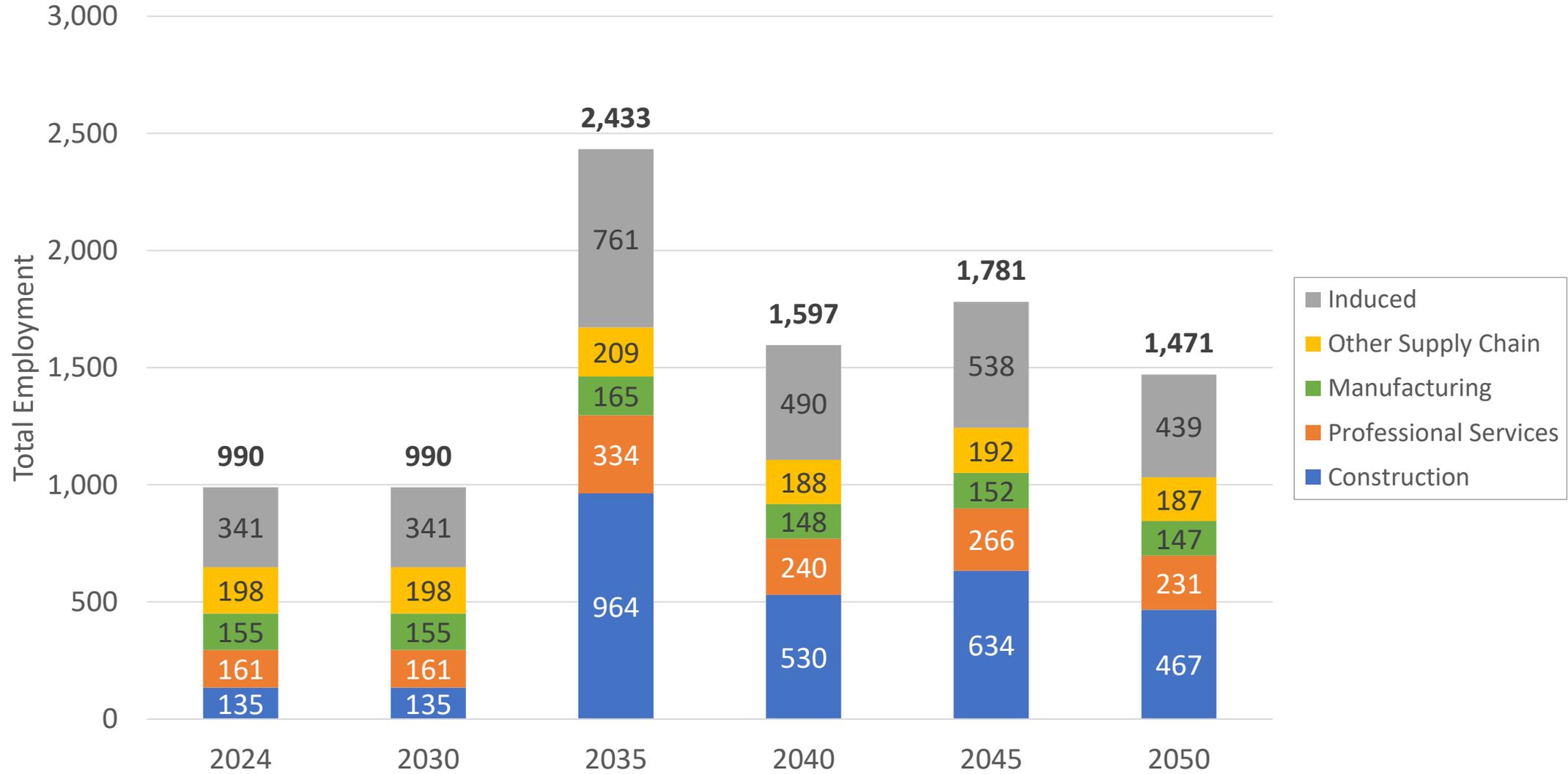
REFERENCE SCENARIO INPUTS, GAS GENERATION, OREGON

Total Installed Capacity



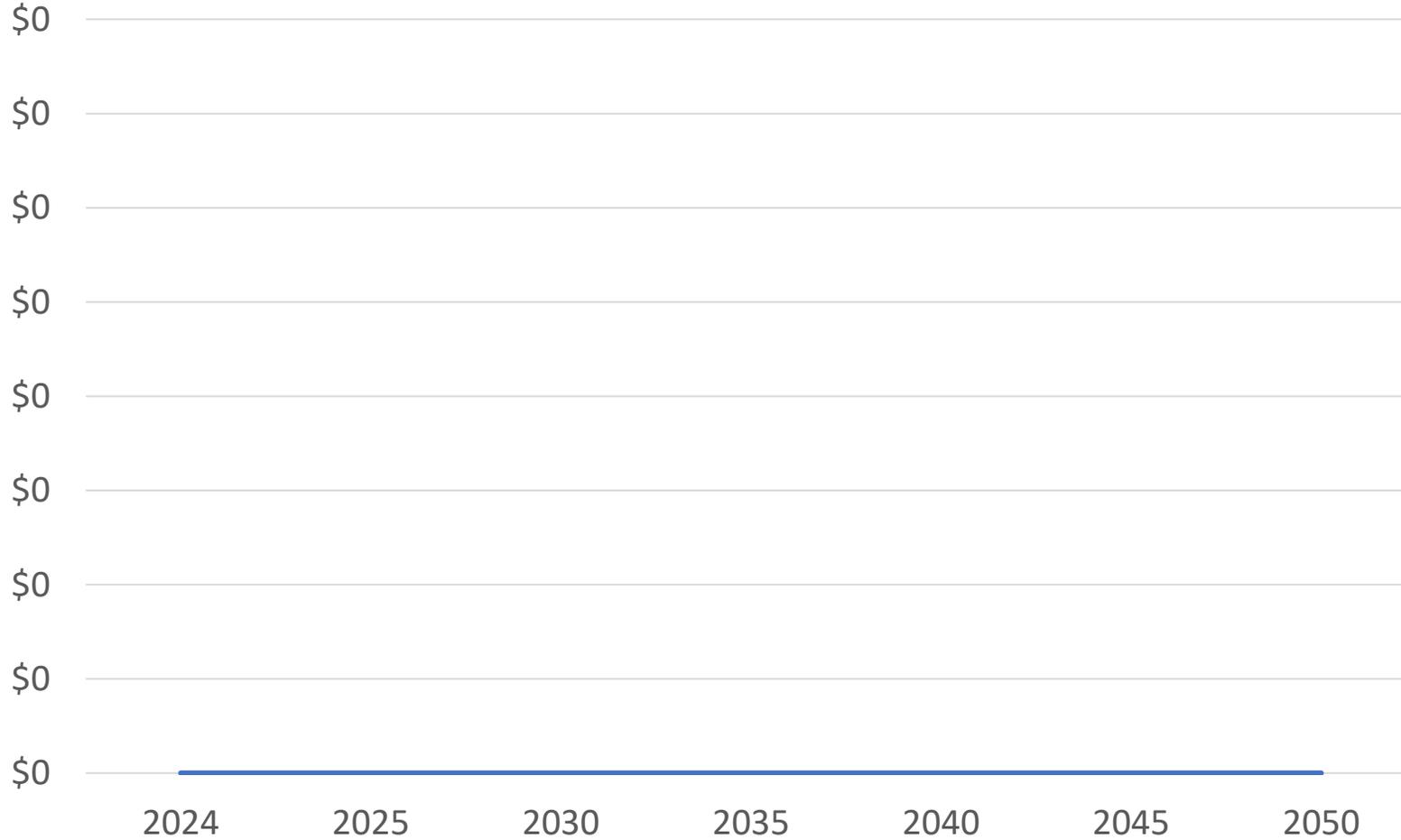
The Gas Generation sub-sector includes existing natural gas plant capacity and newly installed clean gas capacity (including biogas and hydrogen gas), which causes the increase in total installed capacity from 2030 to 2050. No new natural gas generation is installed in Oregon throughout the study years.

REFERENCE SCENARIO OUTPUTS, GAS GENERATION, OREGON



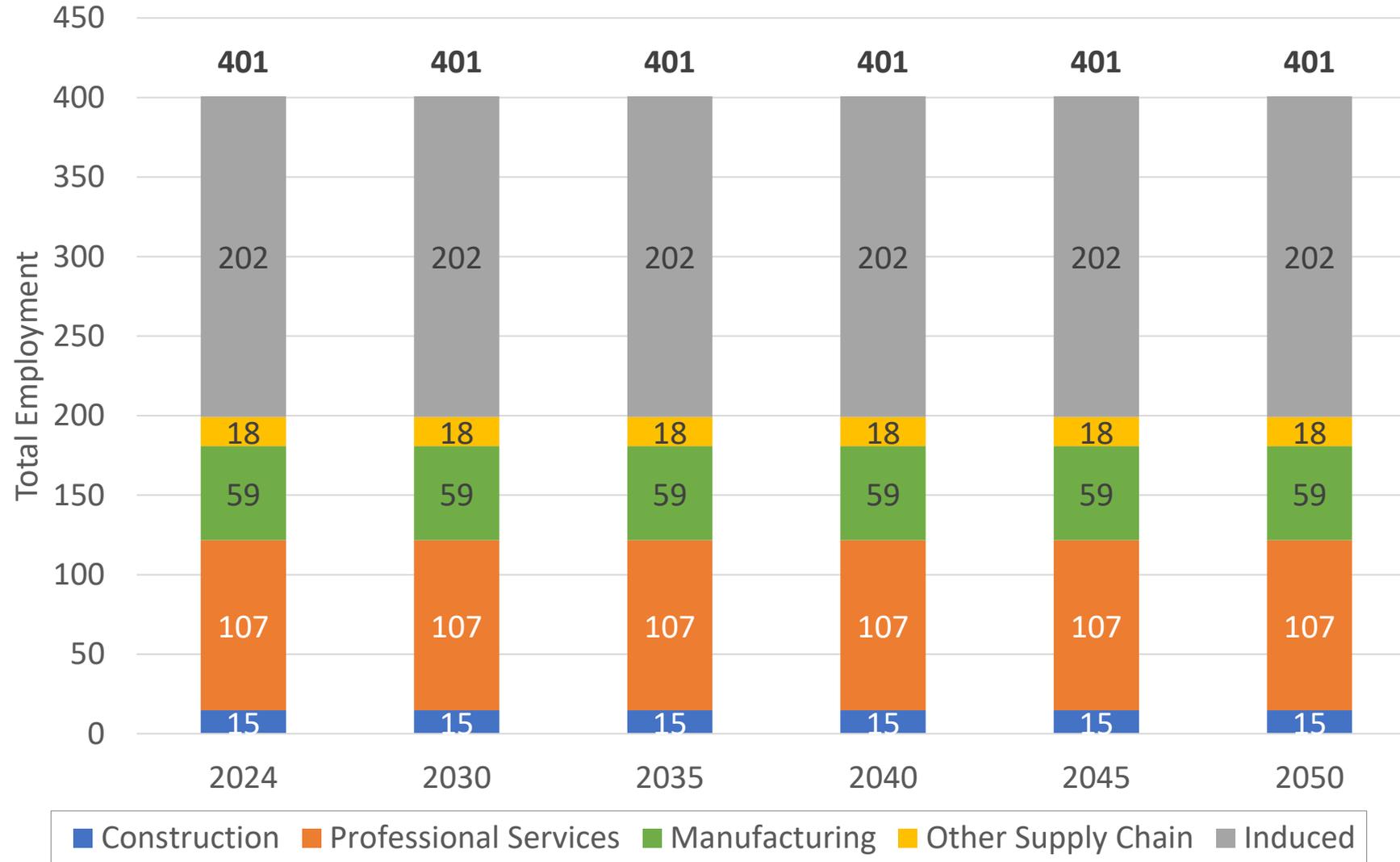
REFERENCE SCENARIO INPUTS, NUCLEAR, OREGON

Total Investment (\$MM)



The EER model did not build nuclear generation in Oregon or any other states. Nuclear employment shows support services for existing nuclear generation in other states. These support services are assumed to stay the same throughout the study years.

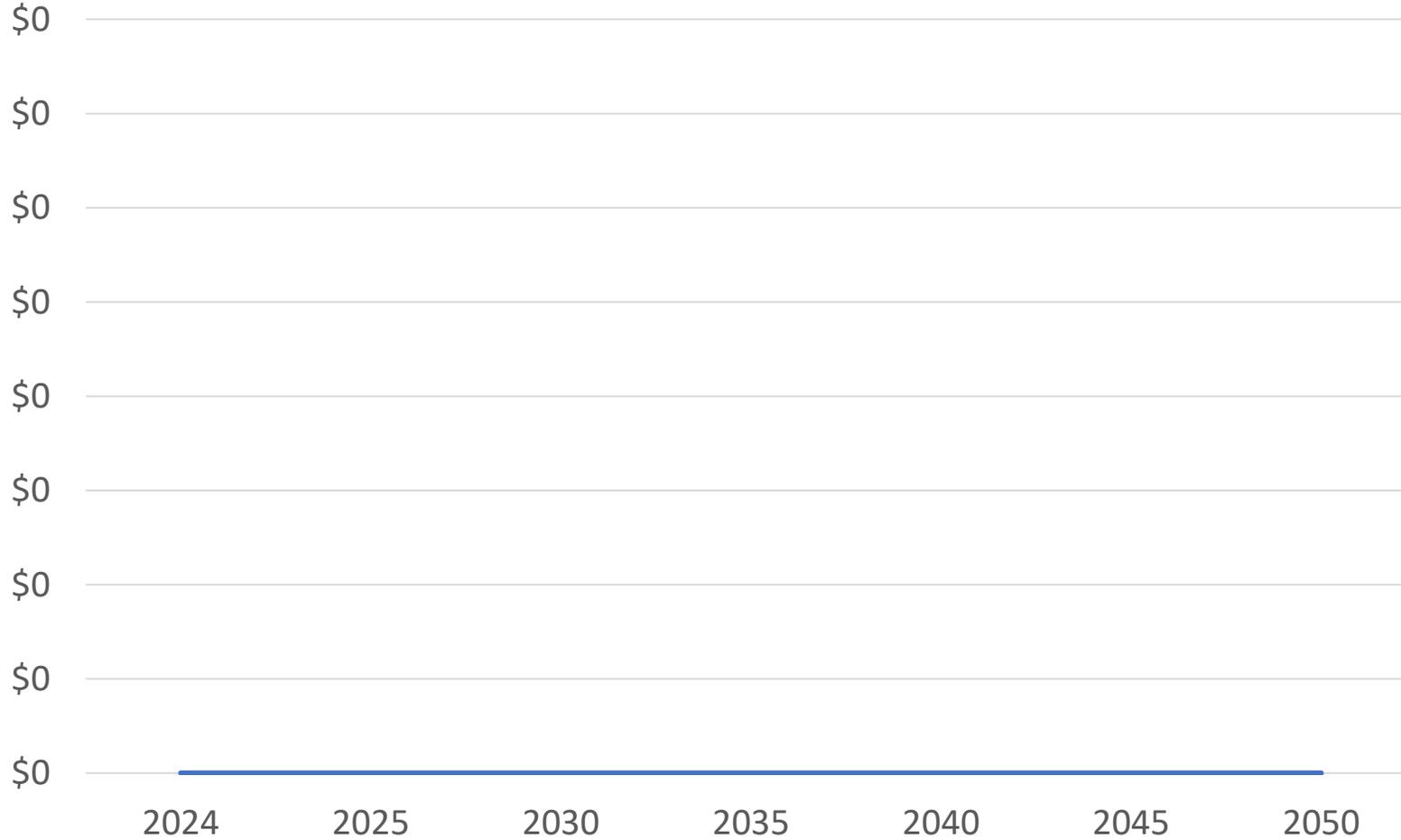
REFERENCE SCENARIO OUTPUTS, NUCLEAR, OREGON



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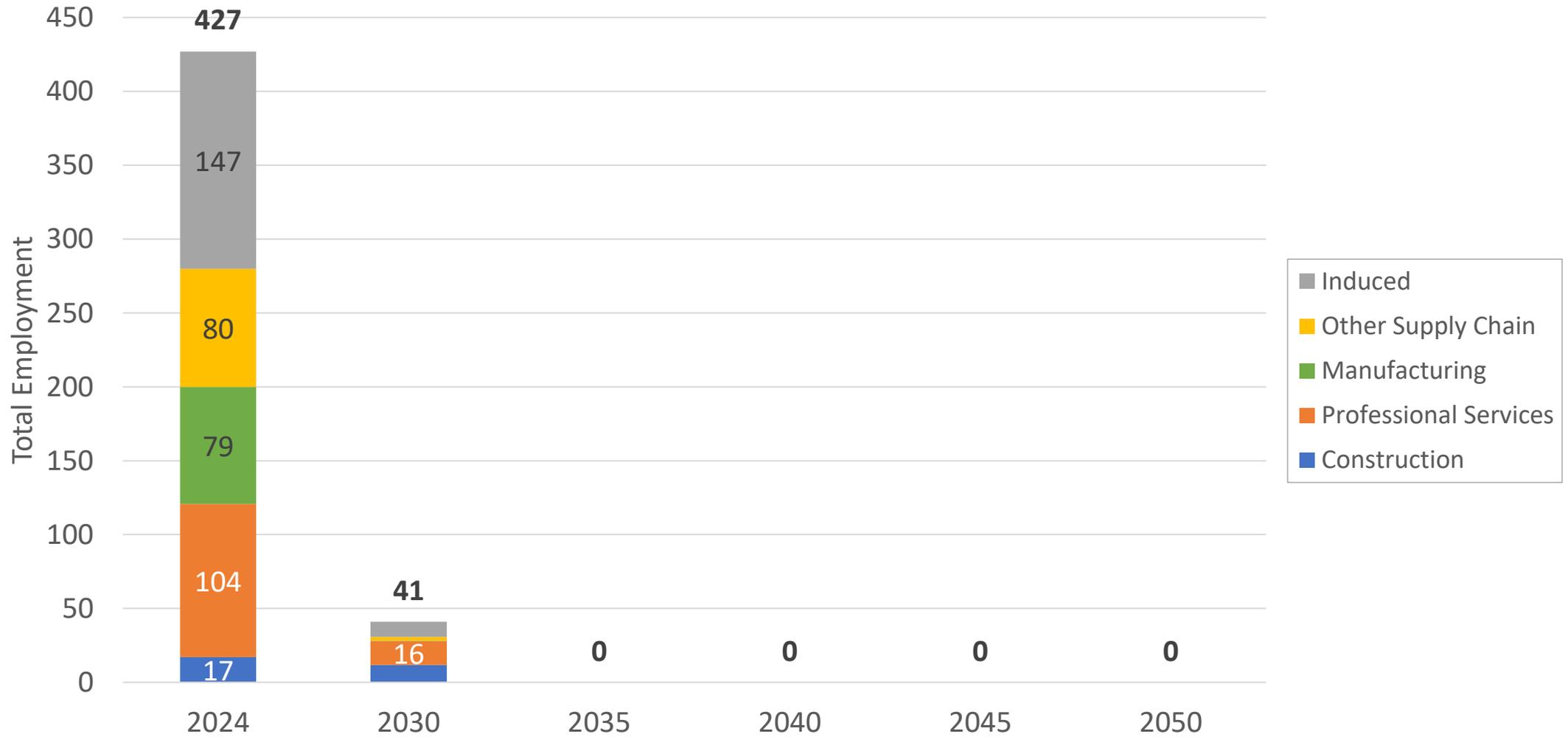
REFERENCE SCENARIO INPUTS, OTHER FOSSIL GENERATION, OREGON

Total Investment (\$MM)



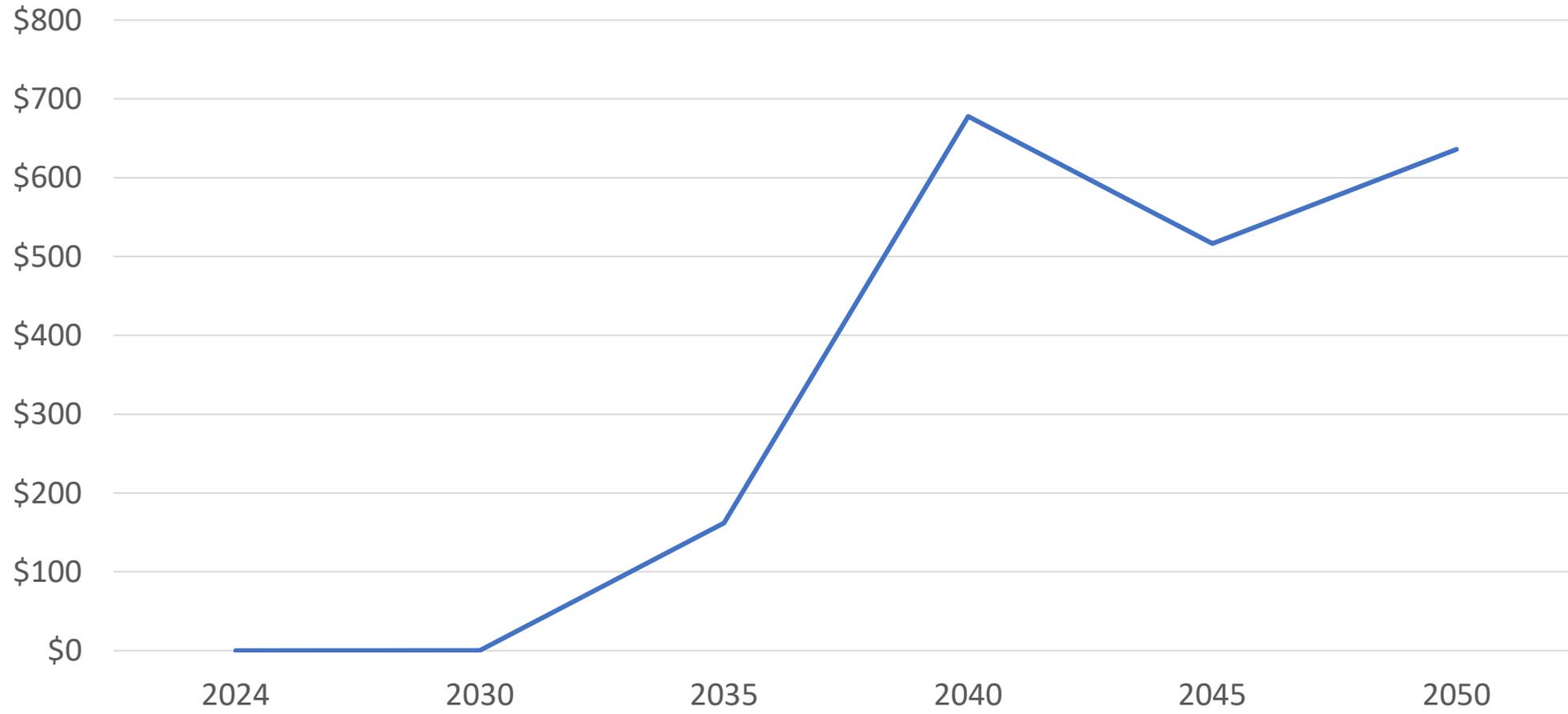
The EER model did not build petroleum or coal generation in Oregon. Other fossil generation employment shows support services for existing coal generation in neighboring states. These support services are assumed to decline with retirements throughout the study years, though there is uncertainty.

REFERENCE SCENARIO OUTPUTS, OTHER FOSSIL GENERATION, OREGON

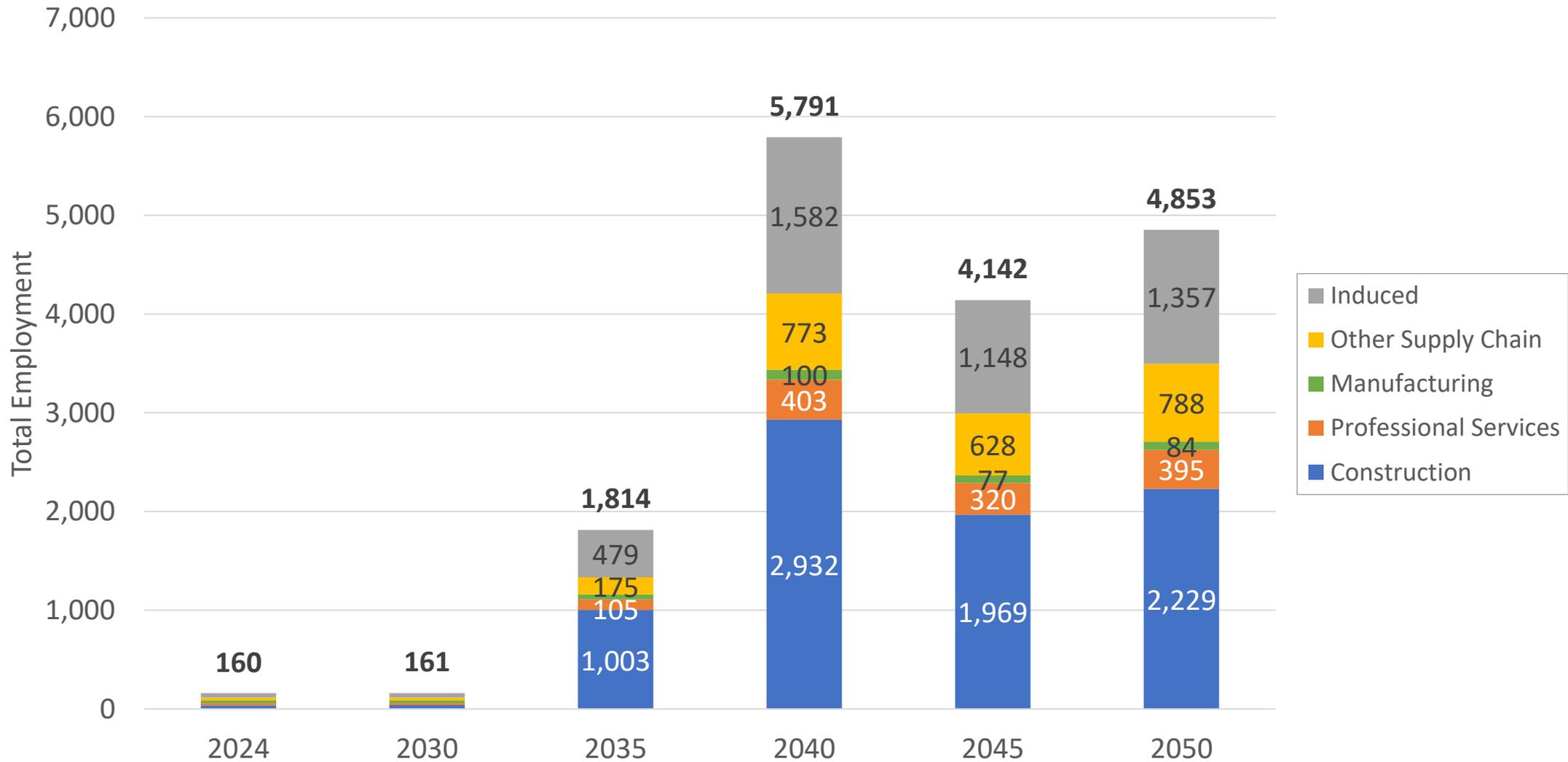


REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - GEOTHERMAL, OREGON

Total Investment - Geothermal (\$MM)

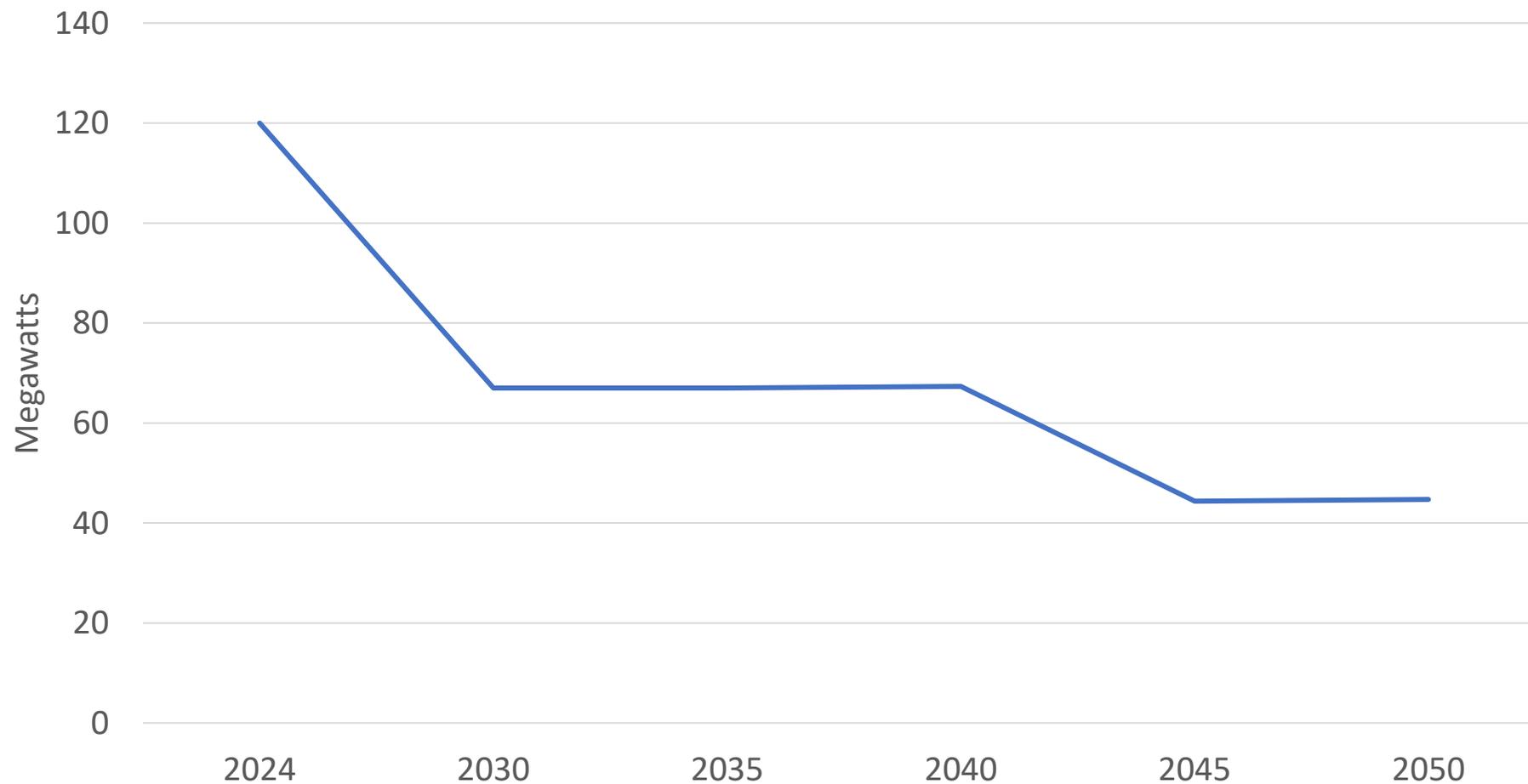


REFERENCE SCENARIO, OTHER RENEWABLE GENERATION – GEOTHERMAL, OREGON

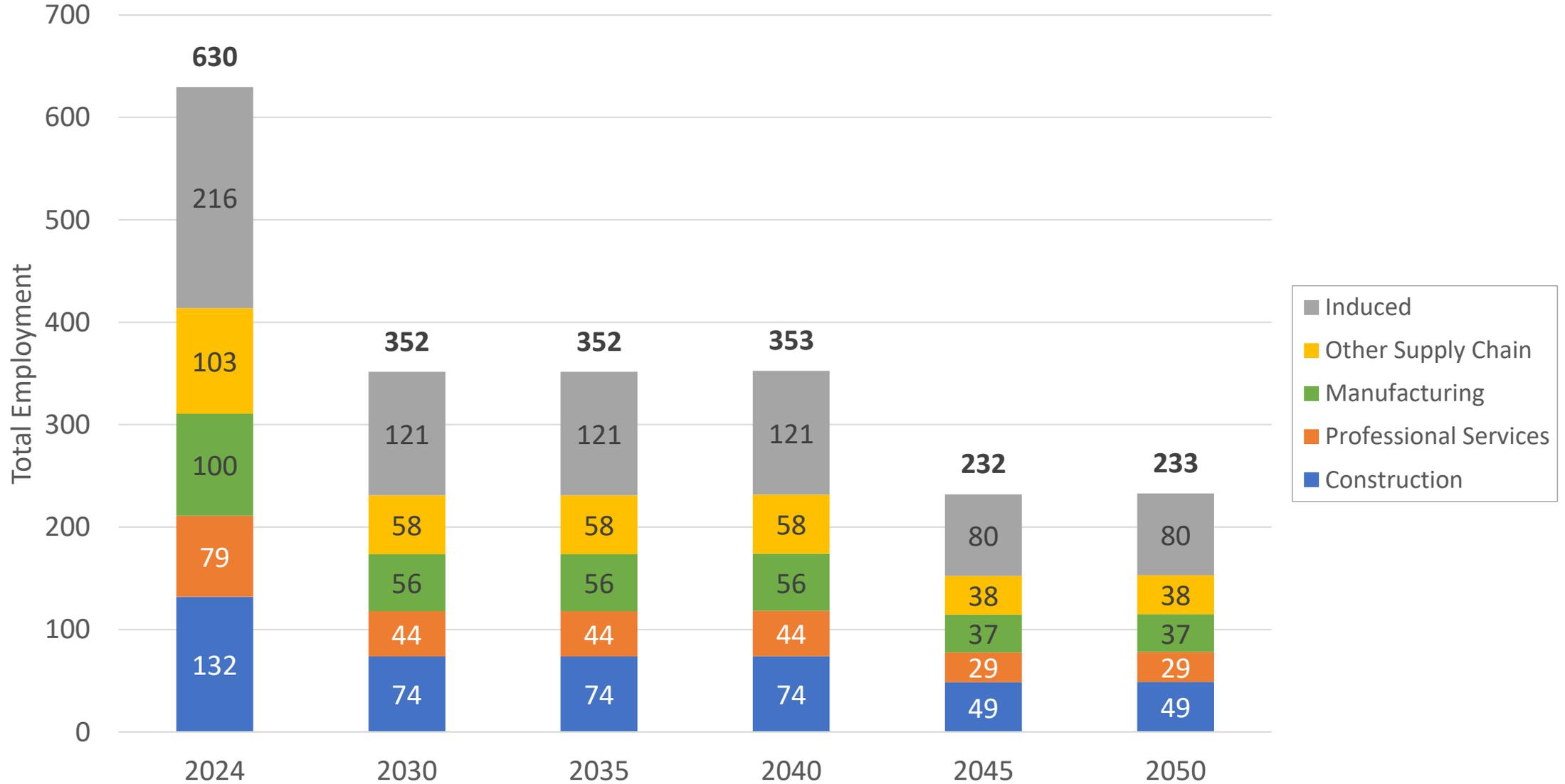


REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - BIOMASS, OREGON

Total Installed Capacity - Biomass

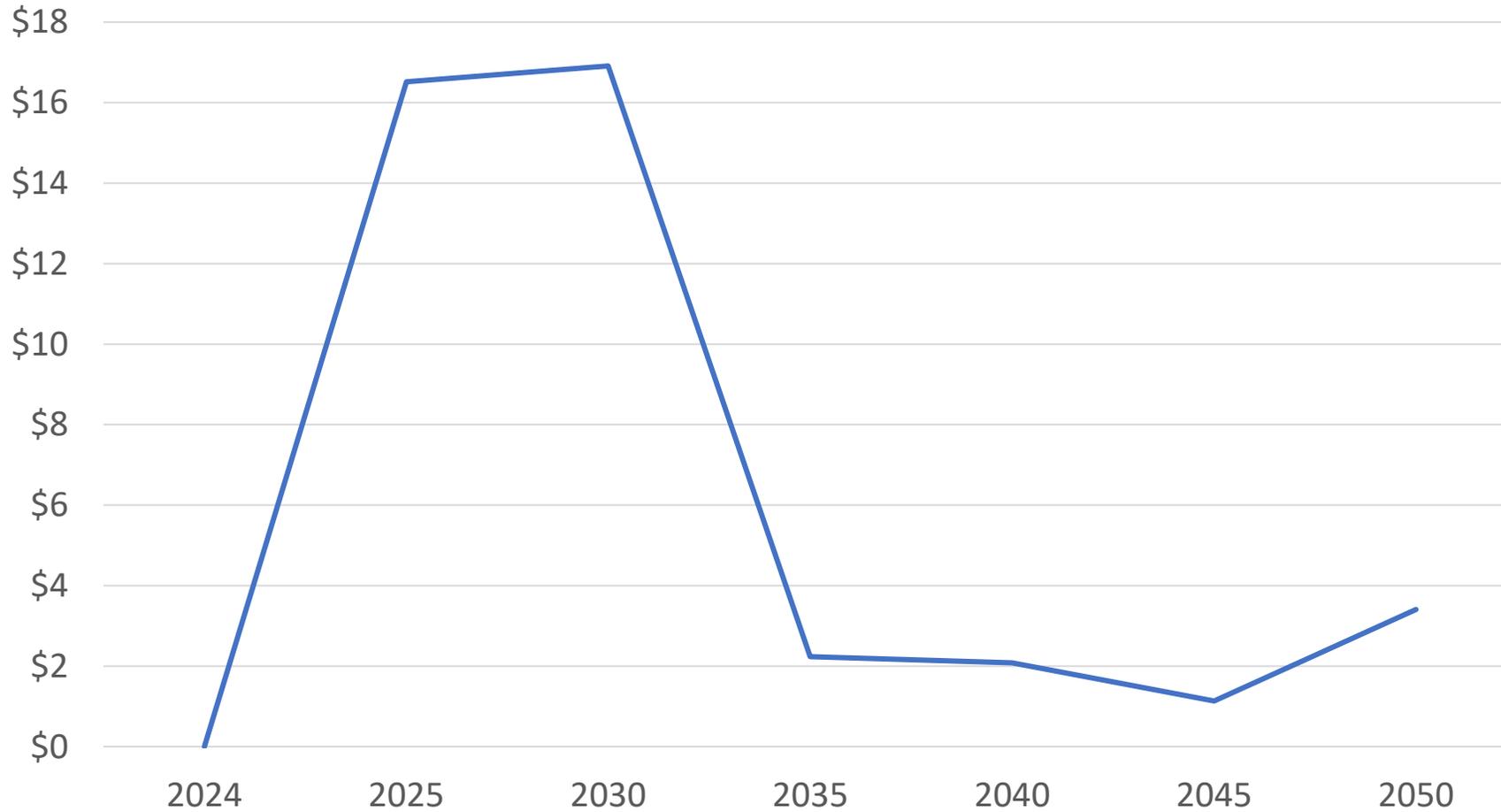


REFERENCE SCENARIO OUTPUTS, OTHER RENEWABLE GENERATION – BIOMASS, OREGON



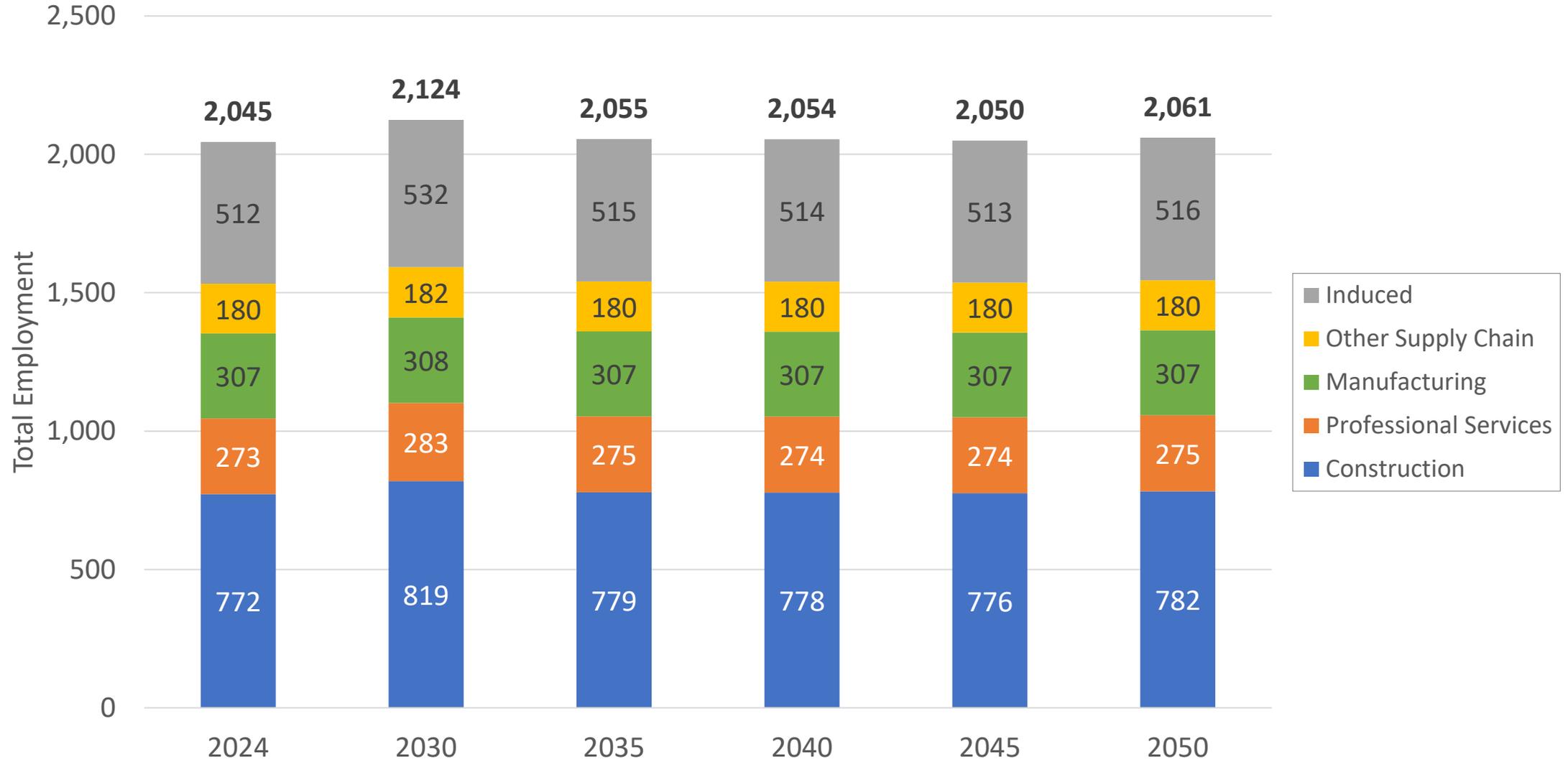
REFERENCE SCENARIO INPUTS, STORAGE, OREGON

Total Investment (\$MM)



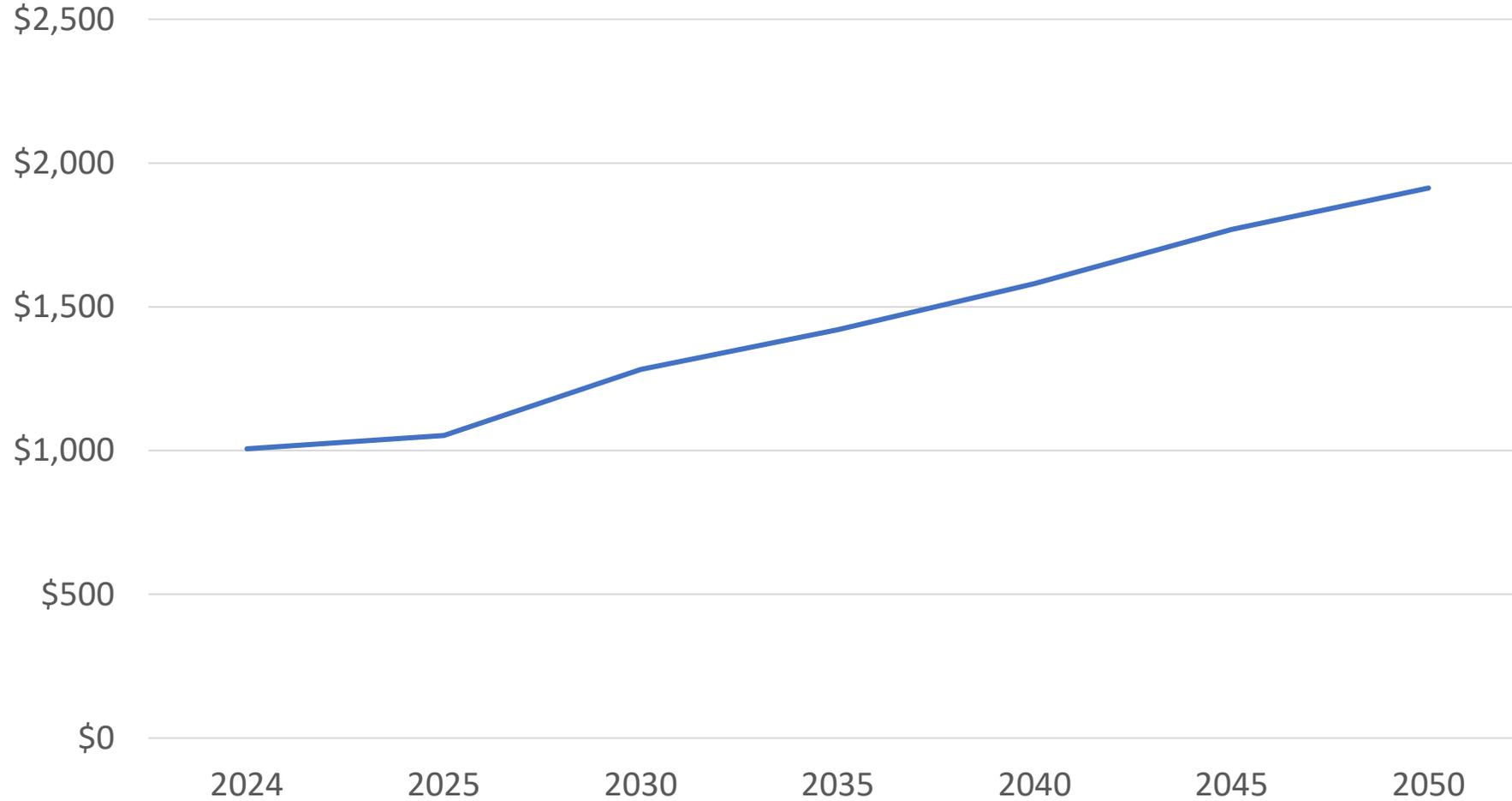
The investment for Storage found by the EER model is incremental to existing Storage capacity. The baseline for 2024 is shown as \$0.

REFERENCE SCENARIO OUTPUTS, STORAGE, OREGON



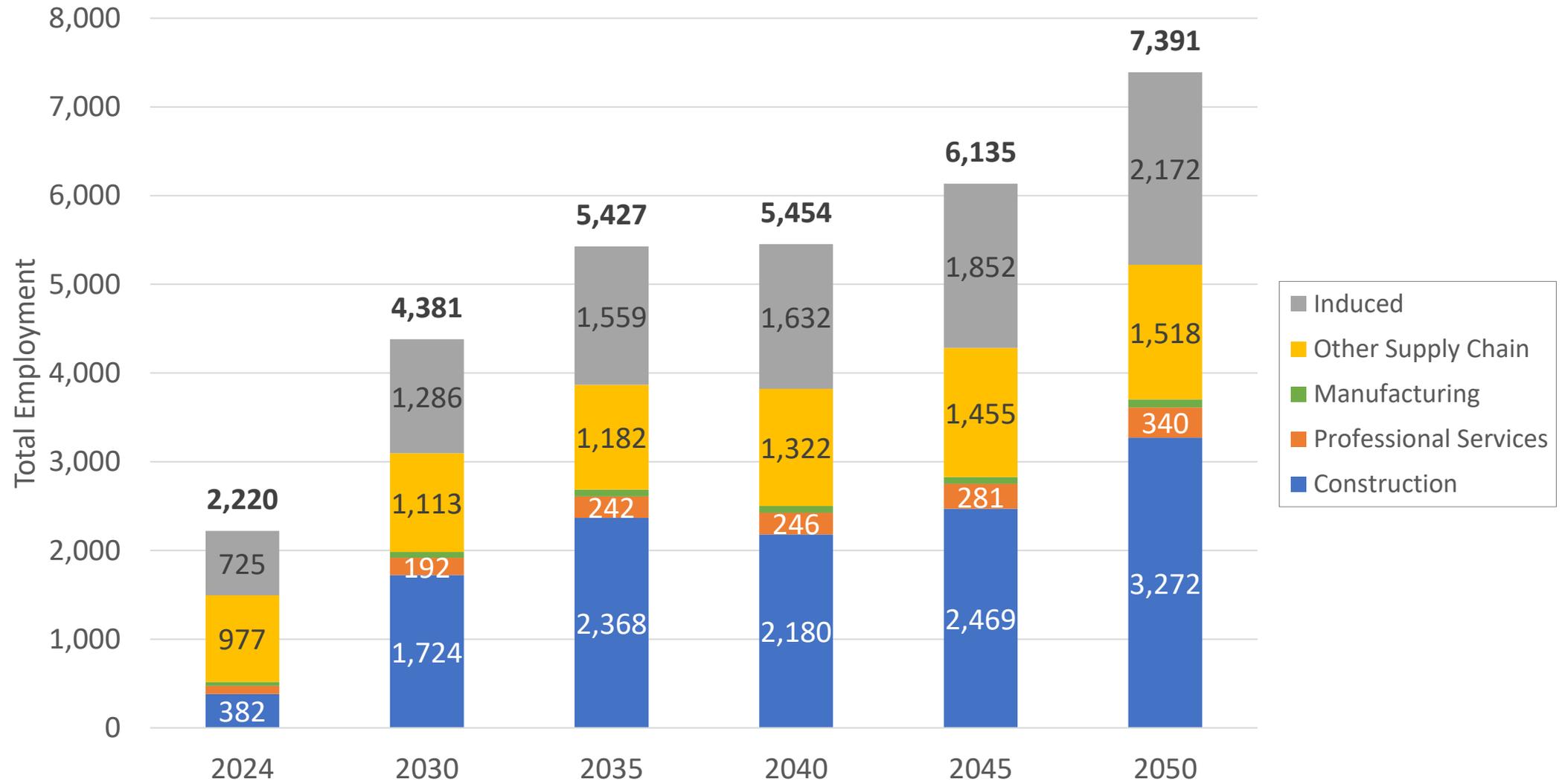
REFERENCE SCENARIO INPUTS, TRANSMISSION, OREGON

Total Investment (\$MM)



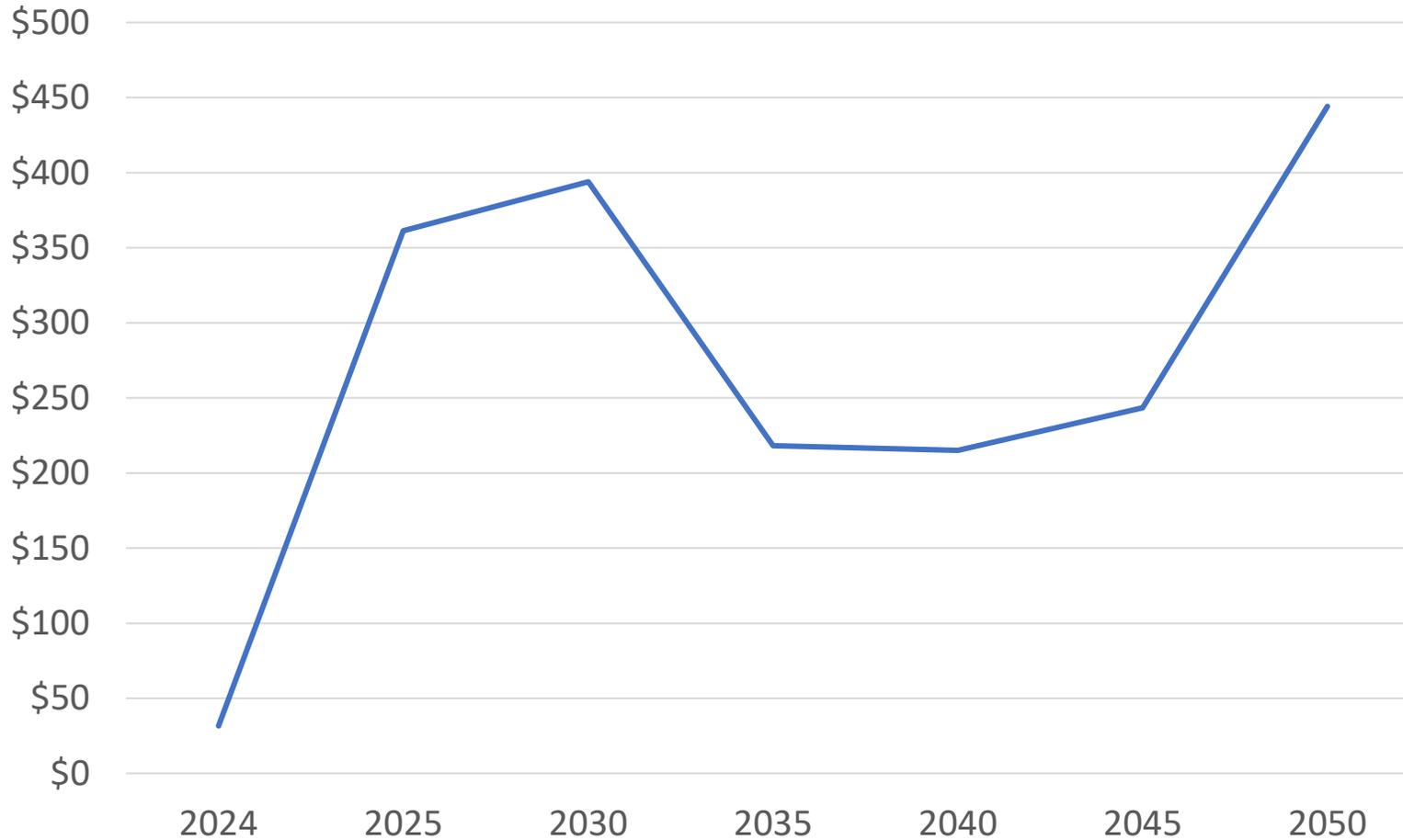
Investments include both [intra- and inter-zonal transmission](#) in Oregon.

REFERENCE SCENARIO **OUTPUTS, TRANSMISSION, OREGON**



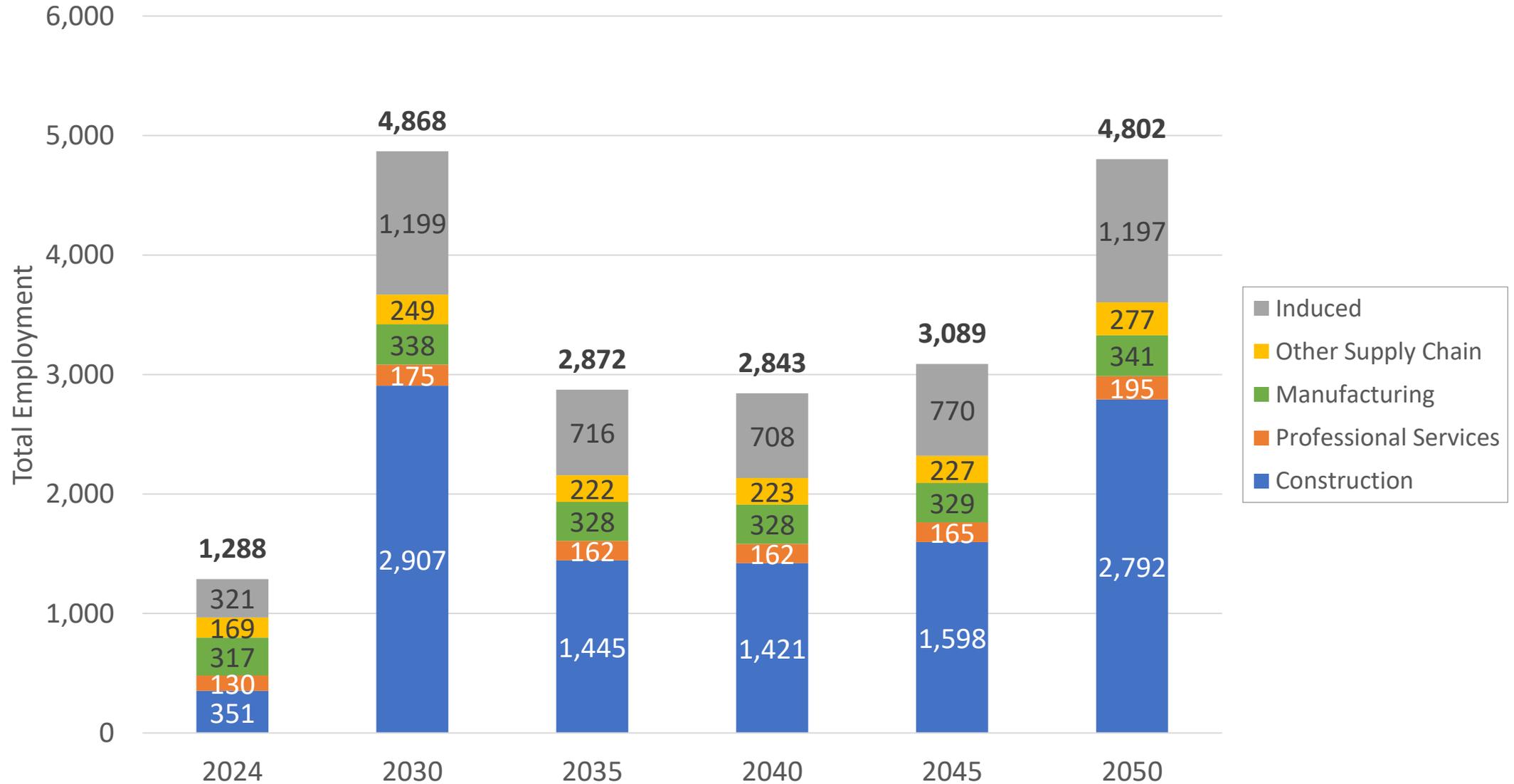
REFERENCE SCENARIO INPUTS, UTILITY SOLAR, OREGON

Total Investment (\$MM)



Significant capital investments required to economically build out utility-scale solar electric generating capacity to meet load.

REFERENCE SCENARIO OUTPUTS, UTILITY SOLAR, OREGON

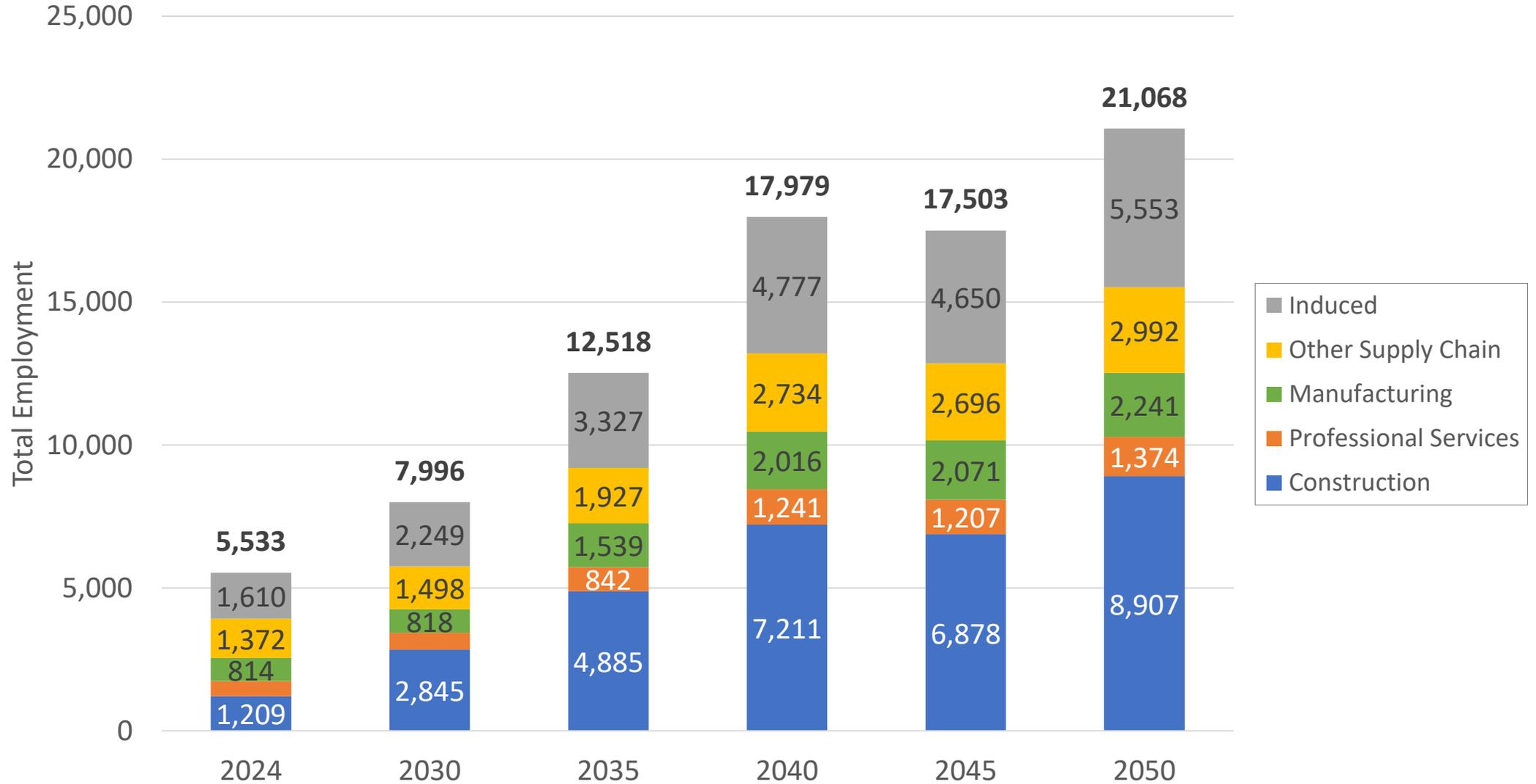


**ELECTRICITY: REFERENCE,
EAST OREGON***

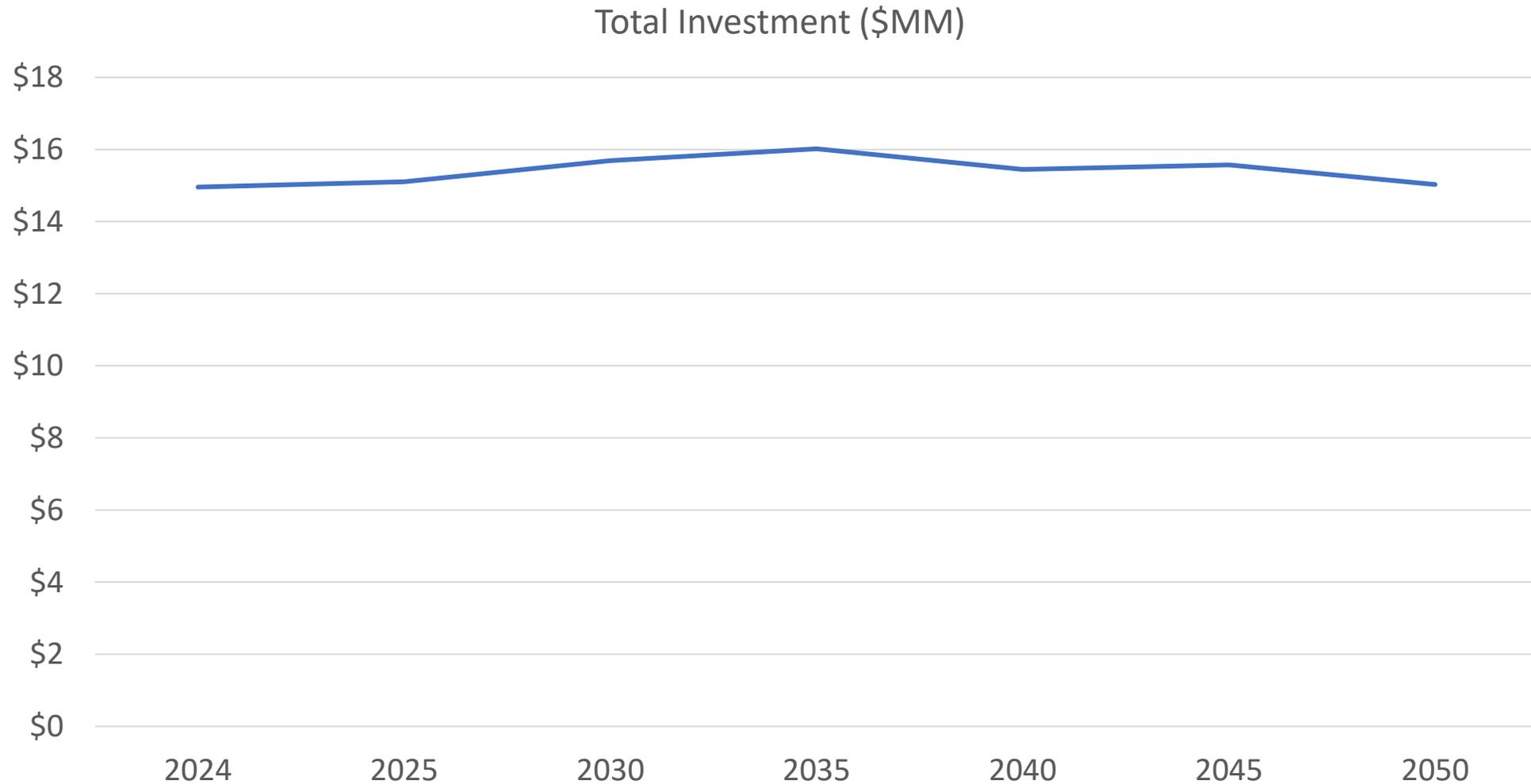
SUB-SECTOR		YEAR					
		2024	2030	2035	2040	2045	2050
Growing Sub-Sectors							
Distribution		1,769	2,115	2,235	2,382	2,518	2,600
Hydropower		501	502	620	518	517	517
Land-Based Wind		496	476	2,705	4,212	4,553	5,184
Gas Generation		492	492	501	520	517	523
Nuclear		53	53	53	53	53	53
Other Ren. Gen.	Geothermal	160	161	1,814	5,791	4,142	4,853
	Biomass	0	0	0	0	0	0
Storage		161	162	166	165	162	167
Transmission		140	1,111	1,518	1,528	1,772	2,252
Utility Solar		279	1,469	1,431	1,398	1,862	3,575
Distributed Solar		1,400	1,455	1,476	1,411	1,407	1,344
Sub-total		5,451	7,996	12,518	17,979	17,503	21,068
Change			2,545	7,067	12,528	12,052	15,617
Displacement Sub-Sectors							
Other Fossil Generation		82	0	0	0	0	0
Sub-total		82	0	0	0	0	0
Change			-82	-82	-82	-82	-82
Electricity OVERALL		5,533	7,996	12,518	17,979	17,503	21,068
Net Change from 2024			2,463	6,985	12,446	11,970	15,535

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

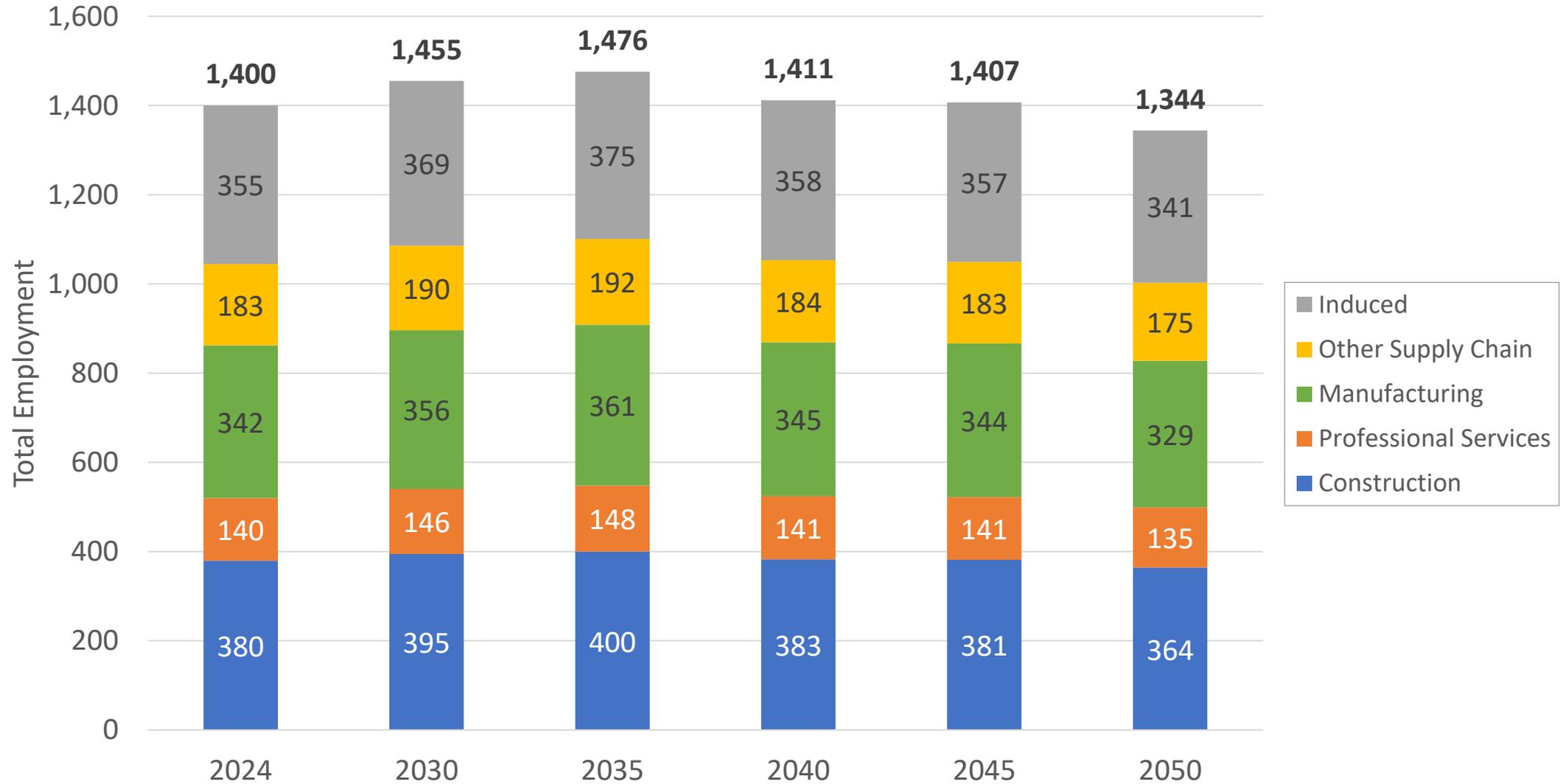
REFERENCE SCENARIO, ELECTRICITY – TOTALS, EAST OREGON



REFERENCE SCENARIO INPUTS, DISTRIBUTED SOLAR PV, EAST OREGON

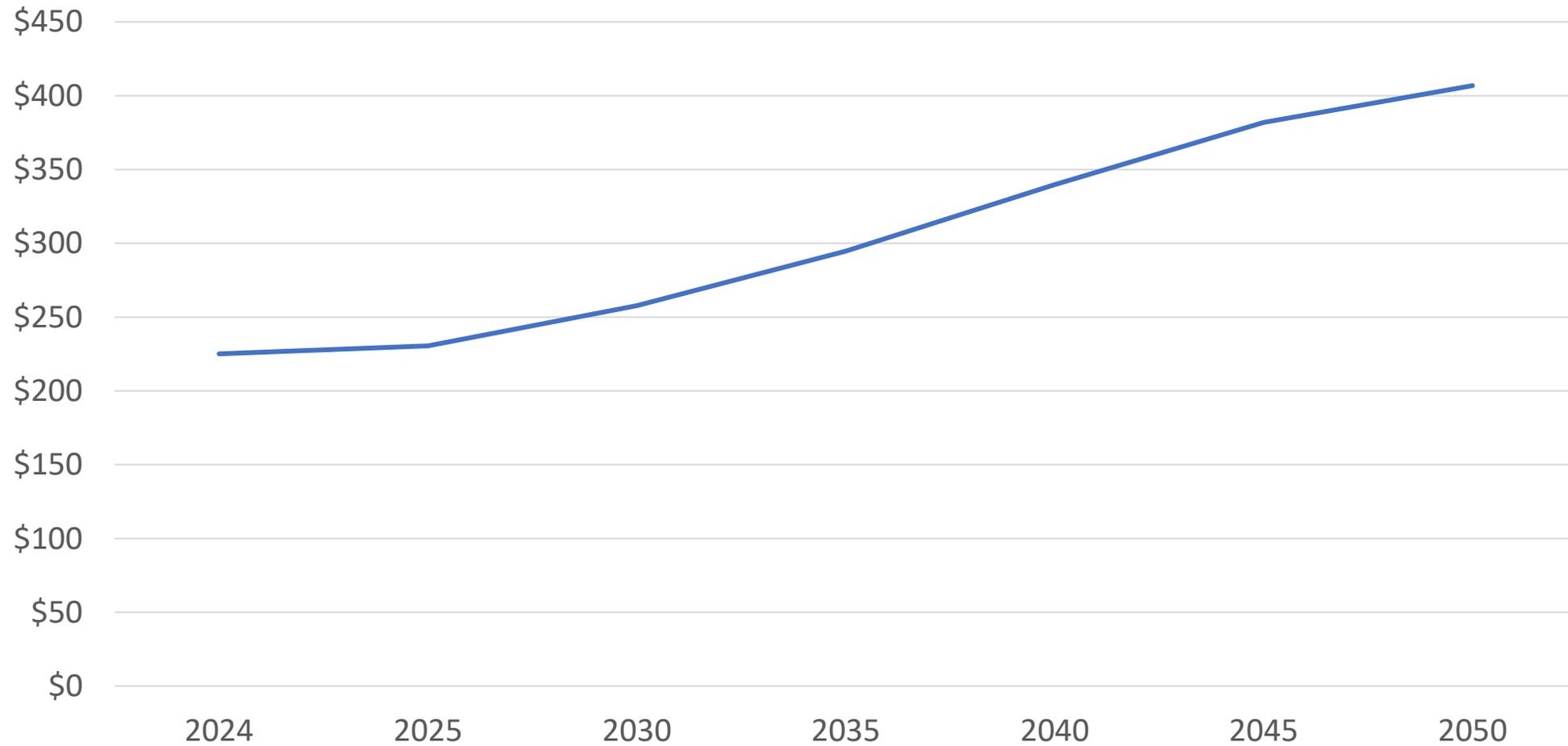


REFERENCE SCENARIO OUTPUTS, DISTRIBUTED SOLAR PV, EAST OREGON

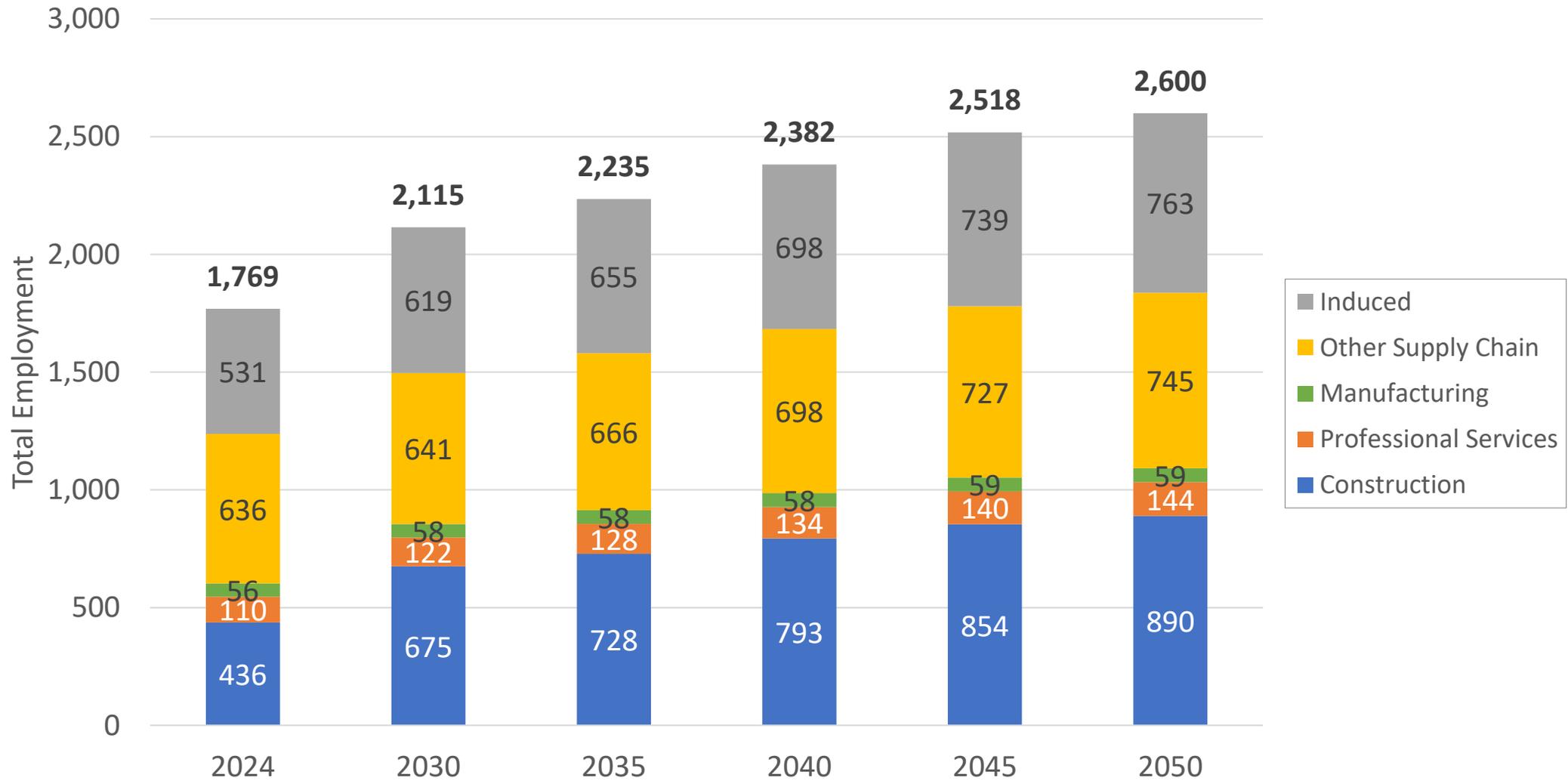


REFERENCE SCENARIO INPUTS, DISTRIBUTION, EAST OREGON

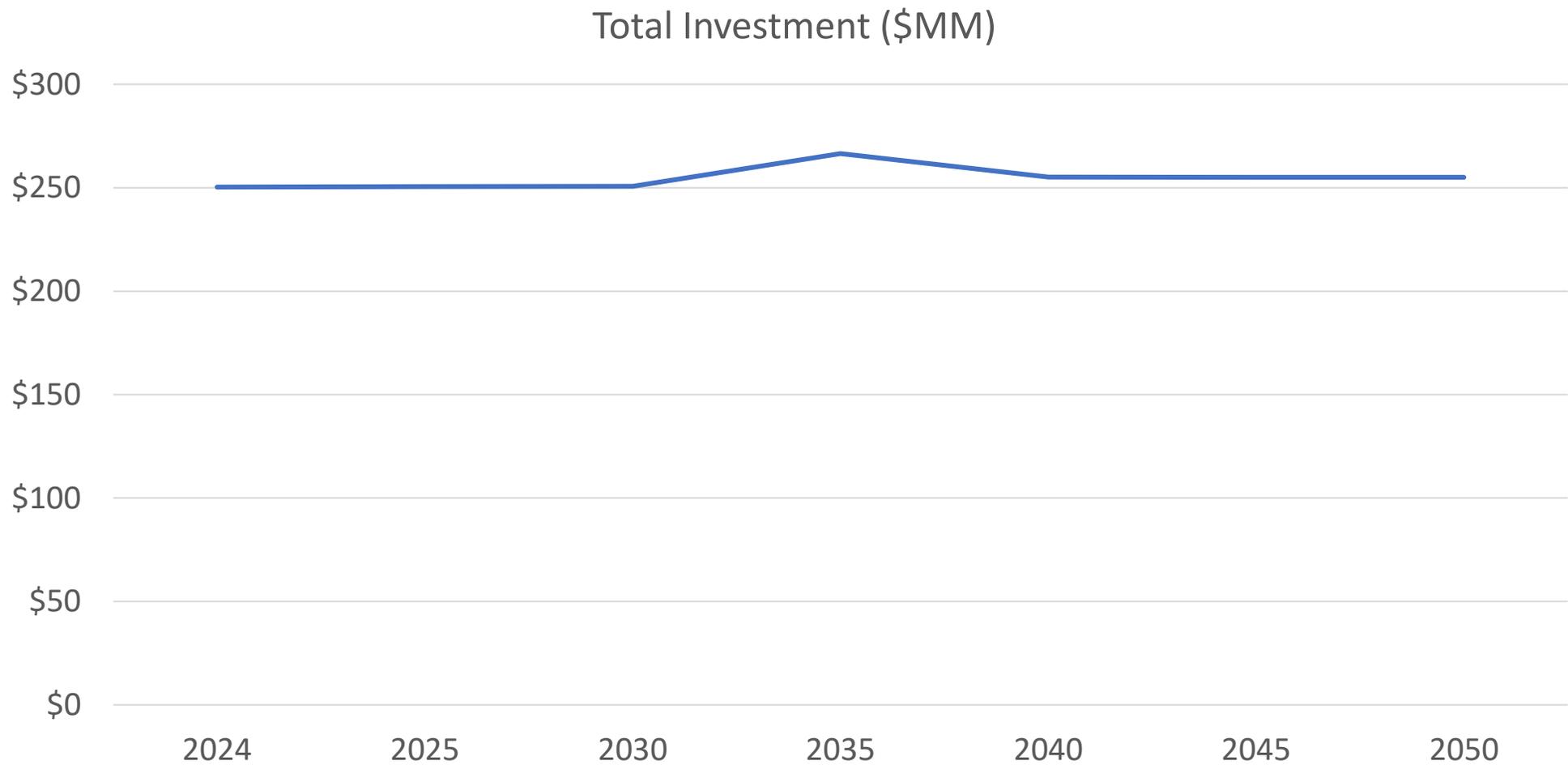
Total Investment (\$MM)



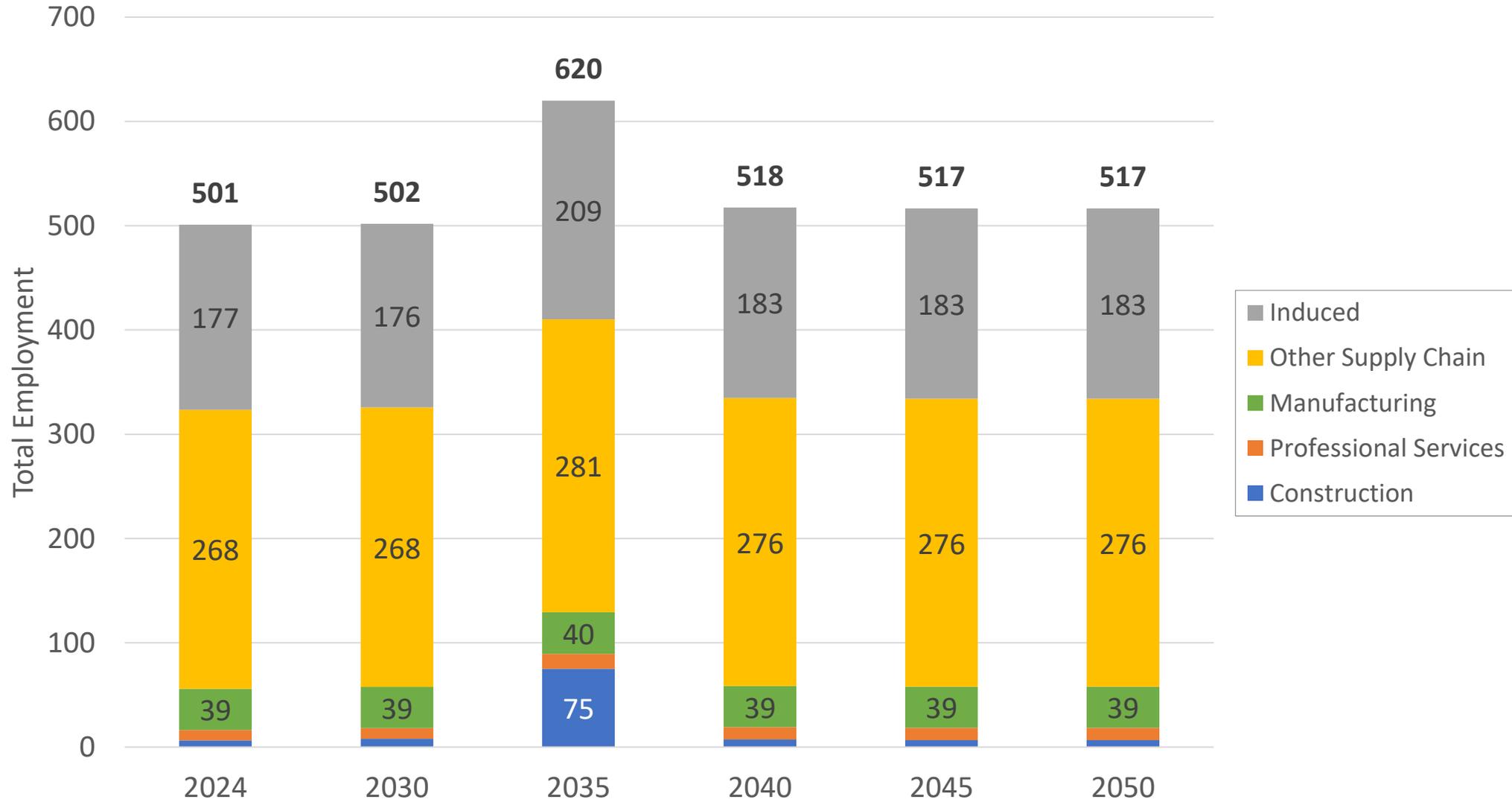
REFERENCE SCENARIO OUTPUTS, DISTRIBUTION, EAST OREGON



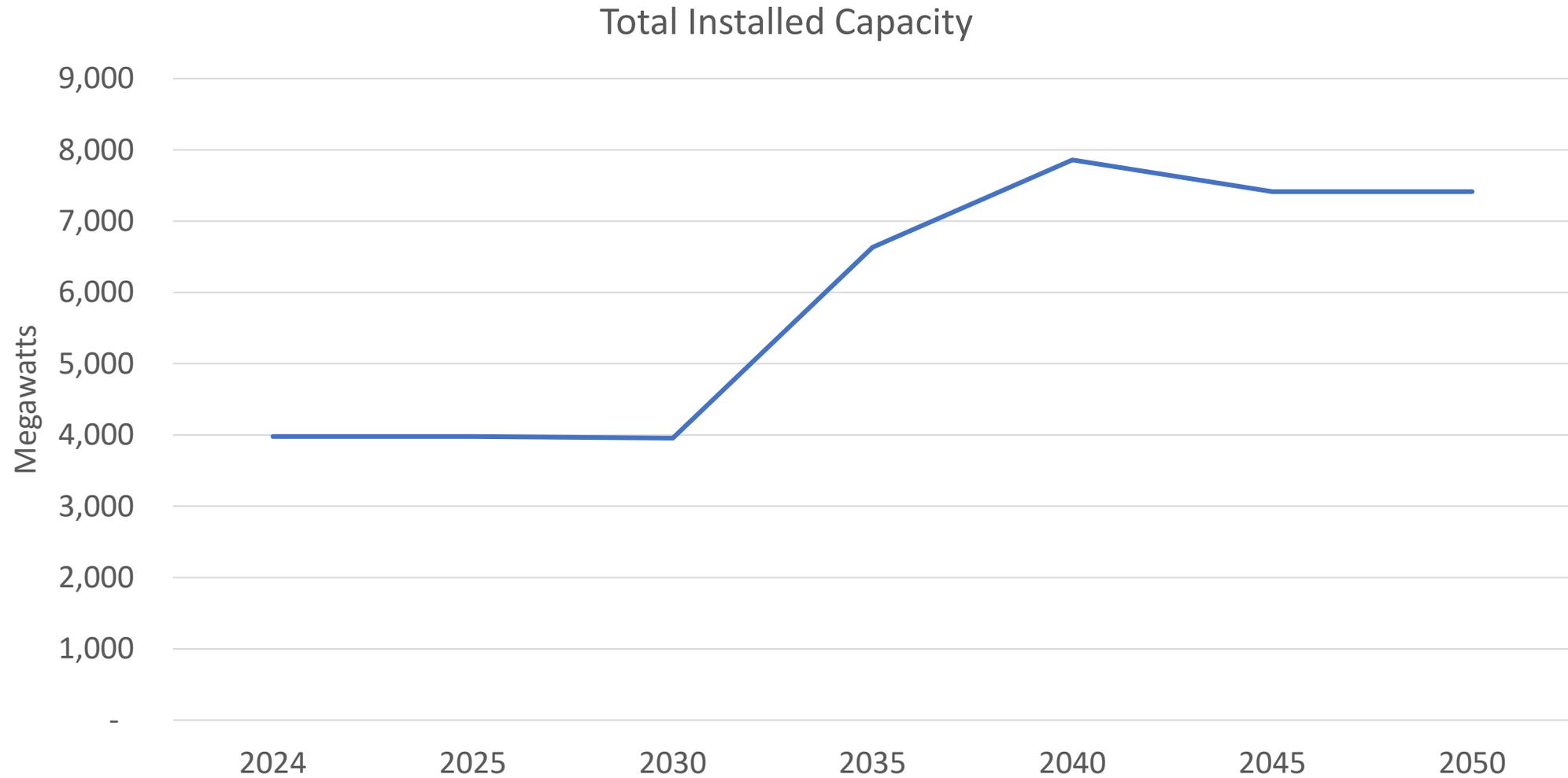
REFERENCE SCENARIO INPUTS, HYROPOWER, EAST OREGON



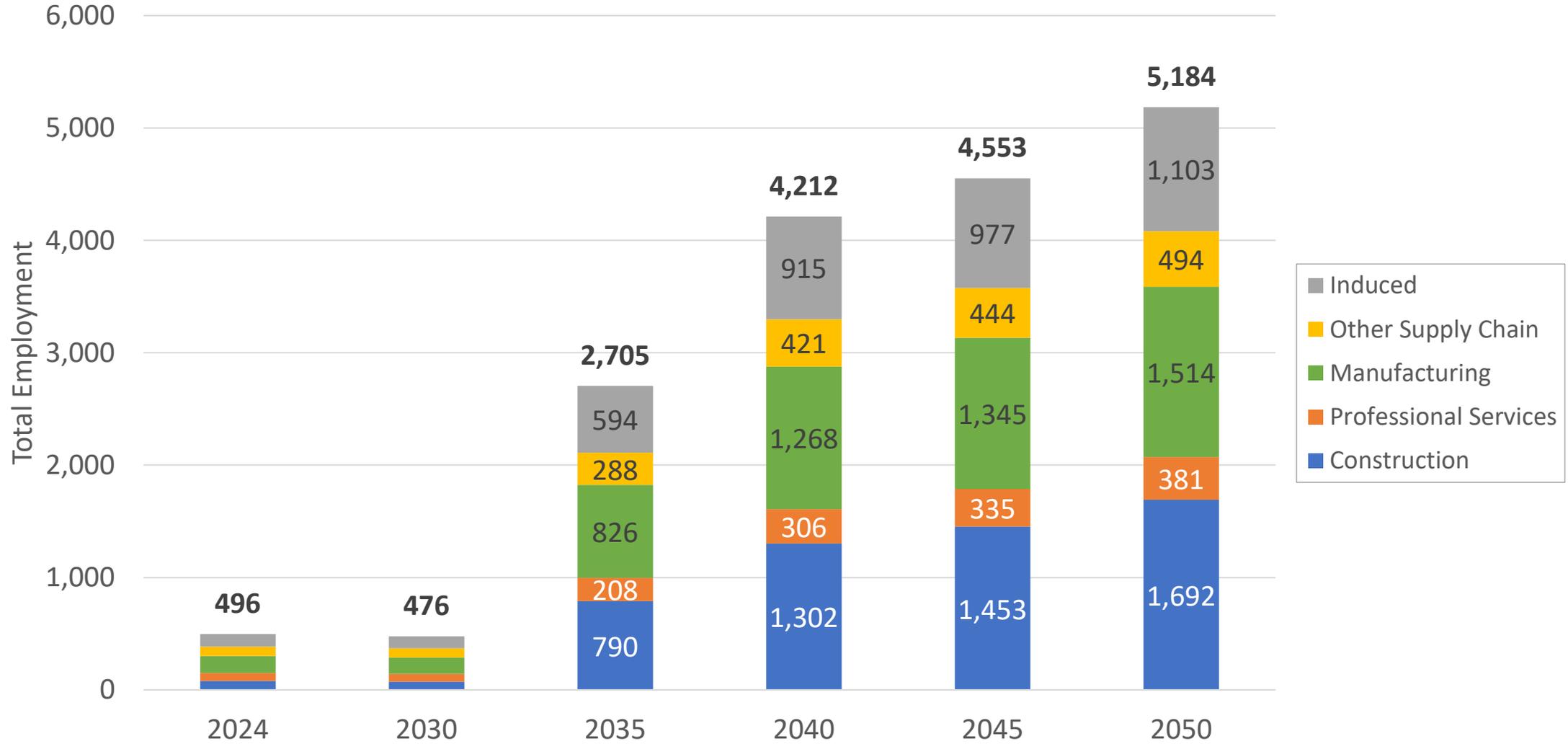
REFERENCE SCENARIO OUTPUTS, HYDROPOWER, EAST OREGON



REFERENCE SCENARIO INPUTS, LAND-BASED WIND, EAST OREGON

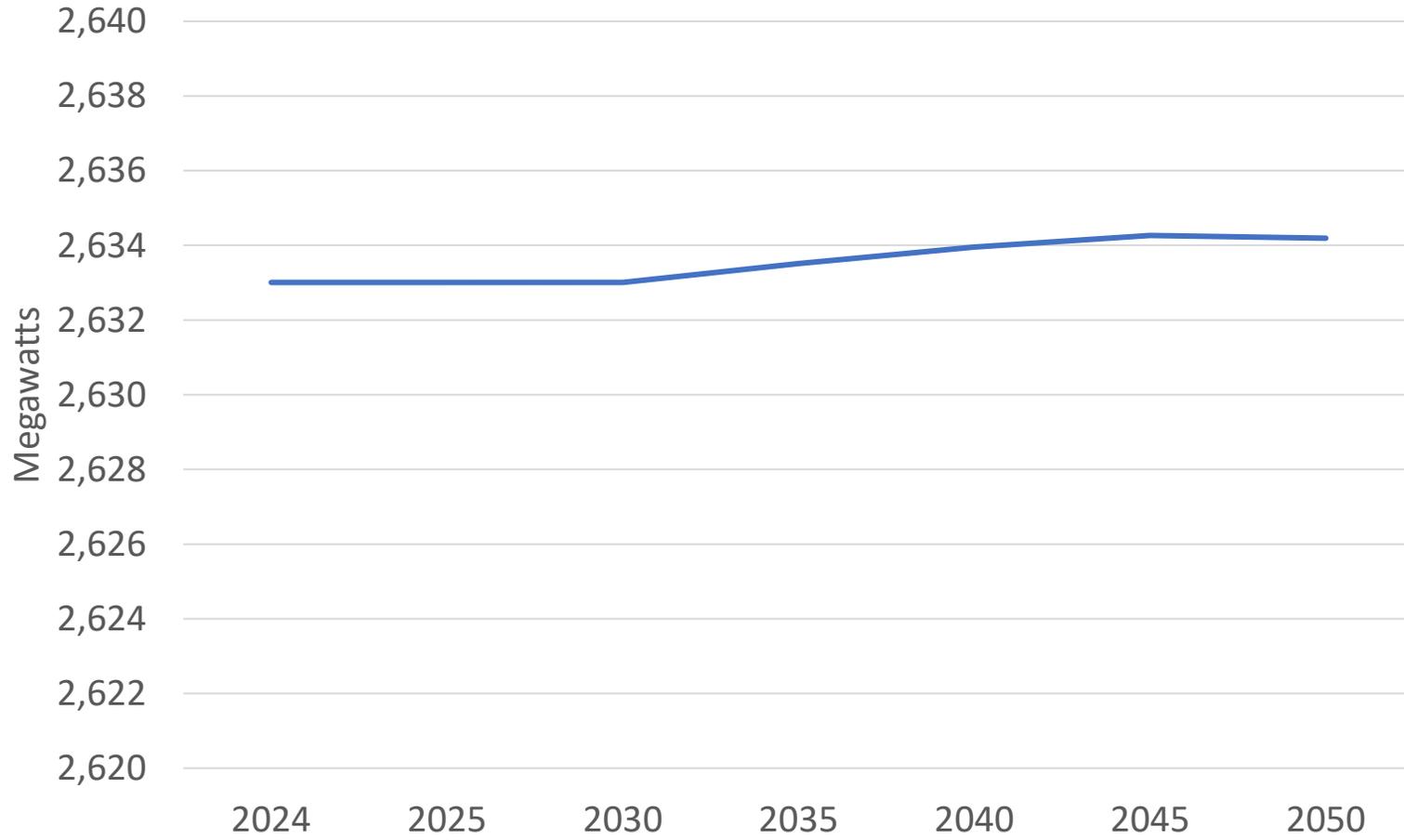


REFERENCE SCENARIO OUTPUTS, LAND-BASED WIND, EAST OREGON



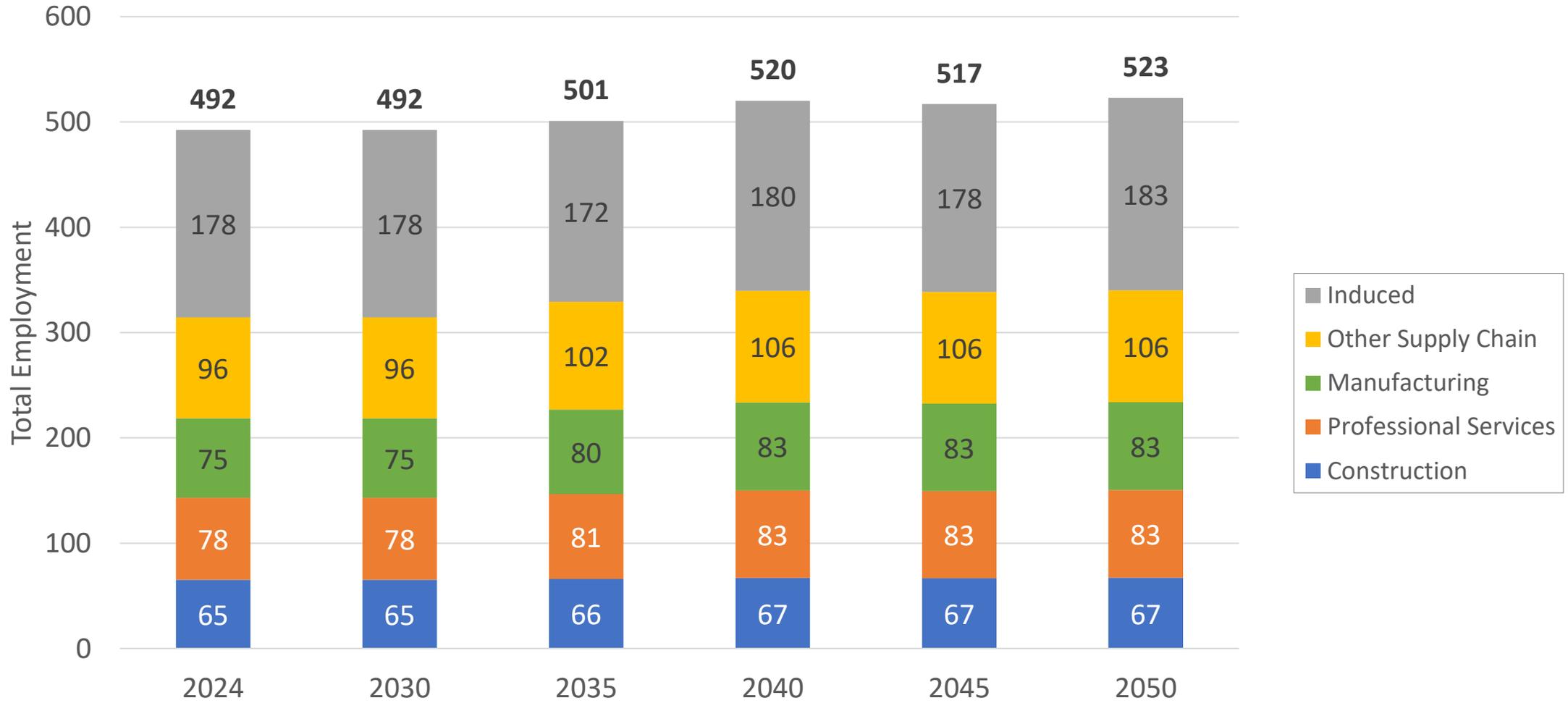
REFERENCE SCENARIO INPUTS, GAS GENERATION, EAST OREGON

Total Installed Capacity



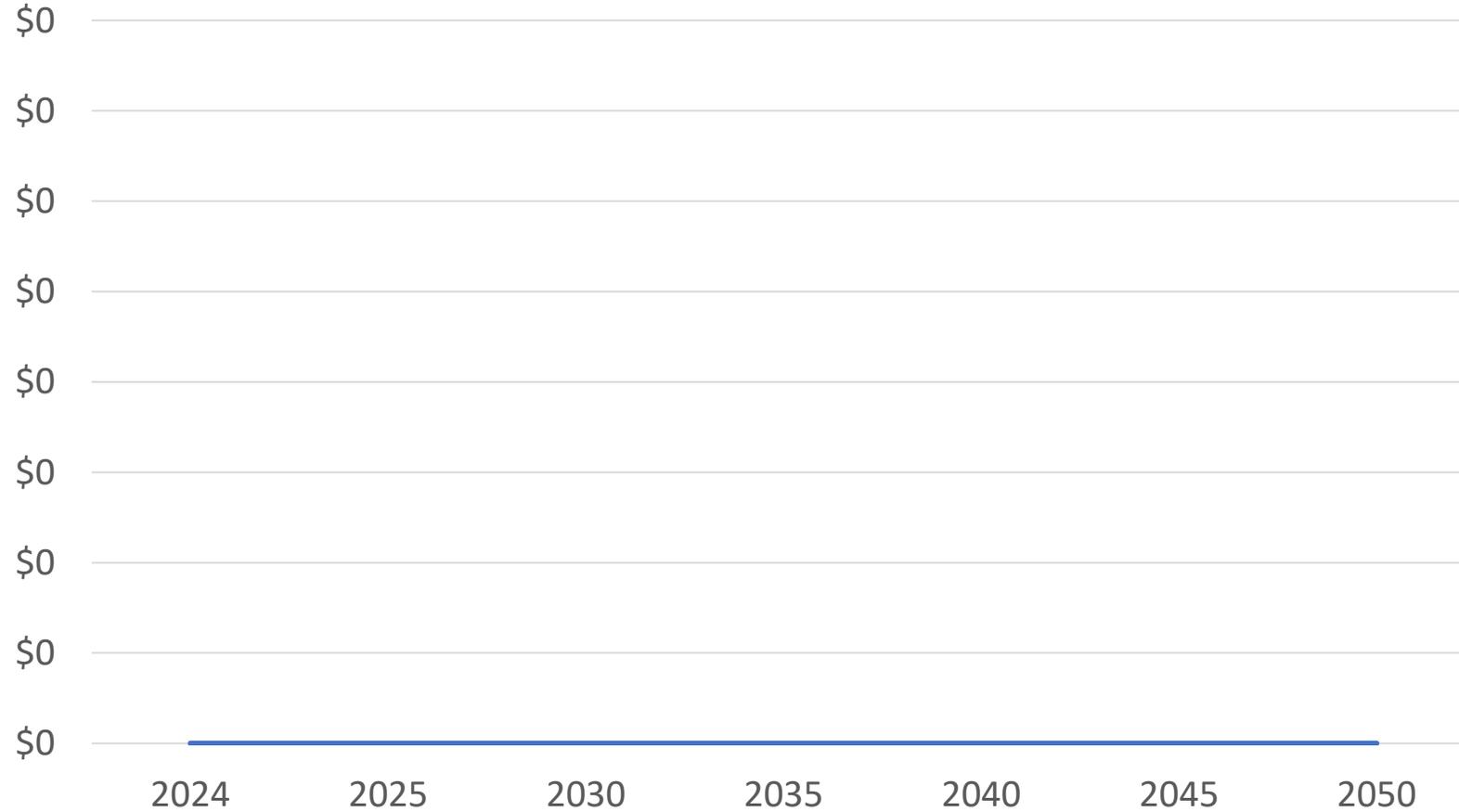
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REFERENCE SCENARIO OUTPUTS, GAS GENERATION, EAST OREGON



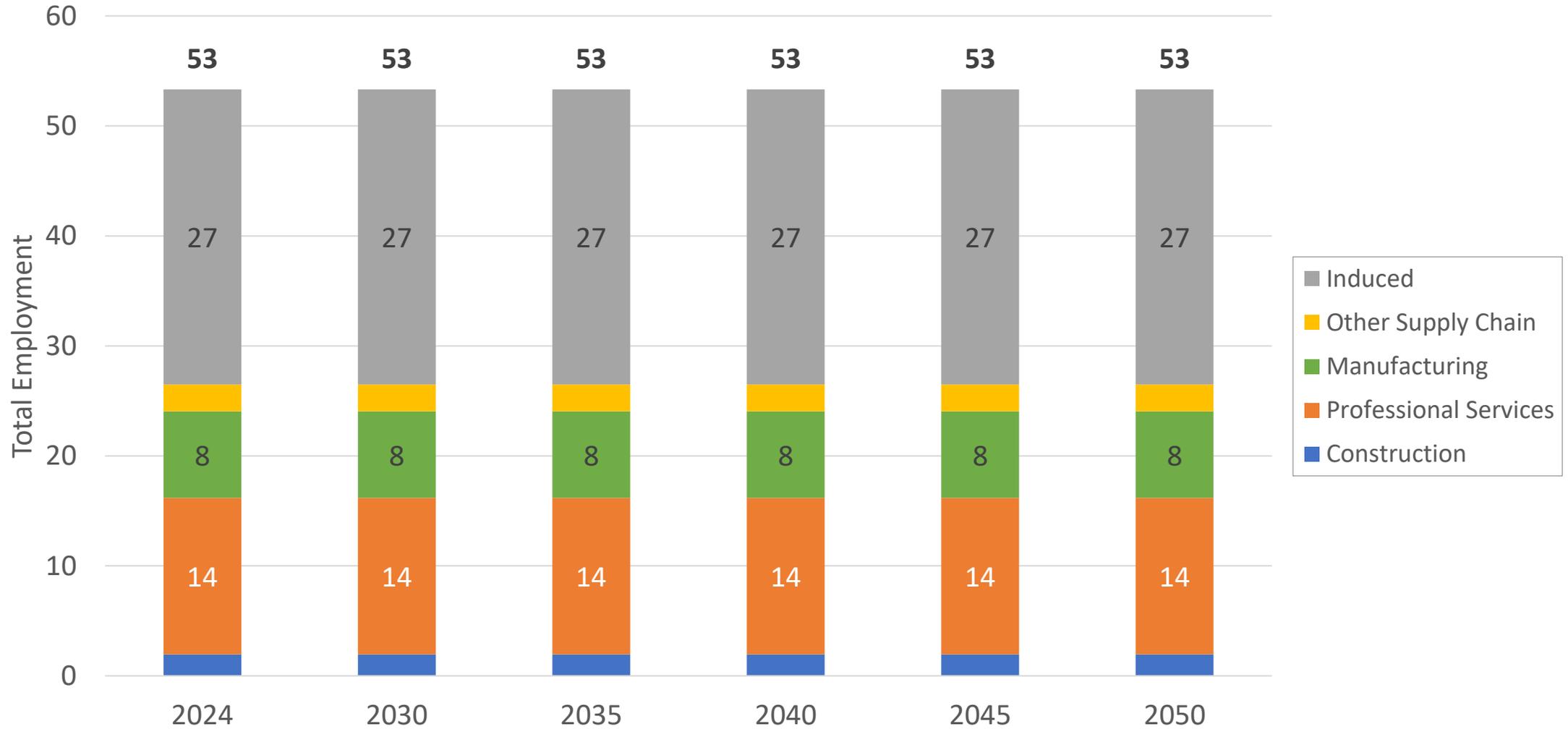
REFERENCE SCENARIO INPUTS, NUCLEAR, EAST OREGON

Total Investment (\$MM)



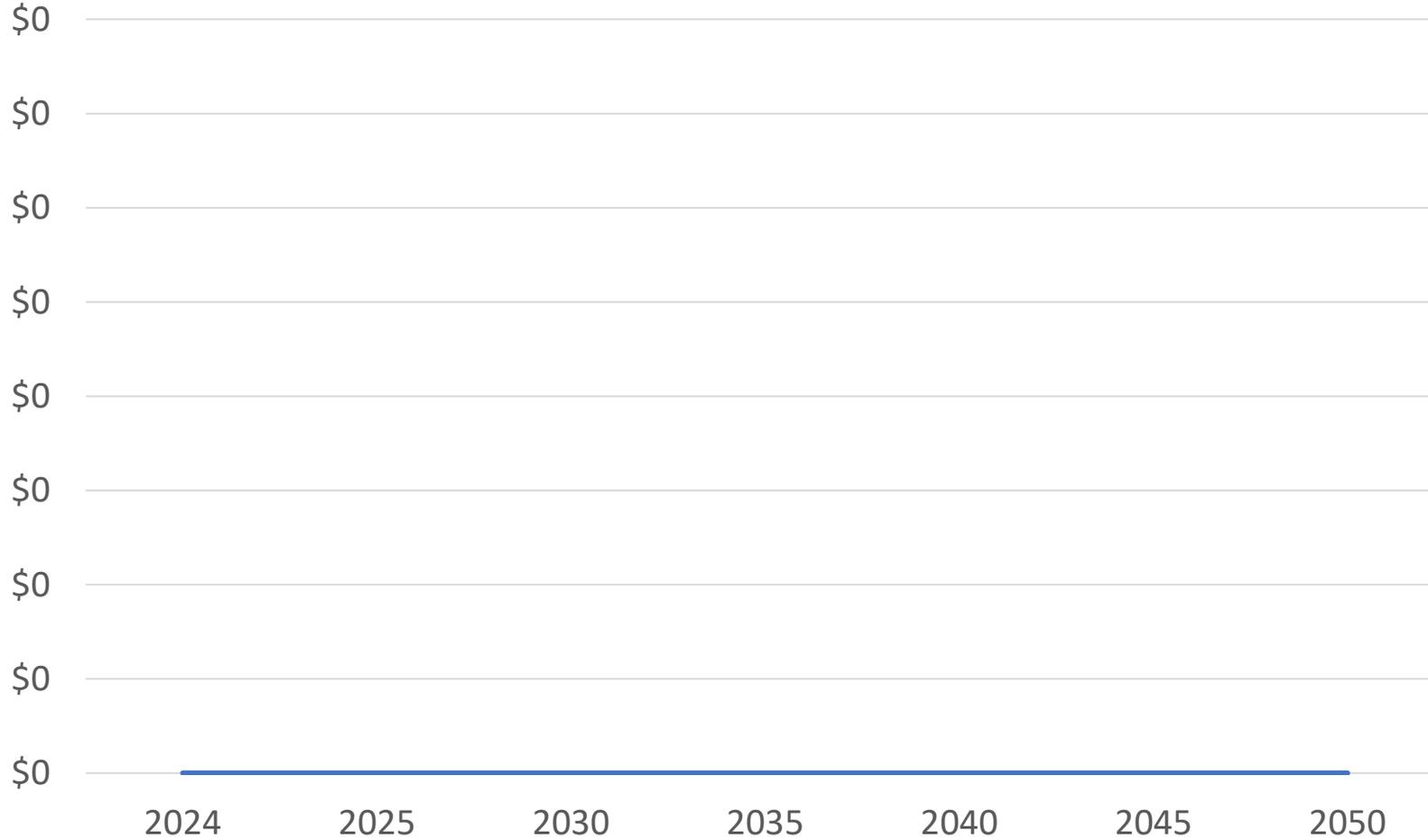
The EER model did not build nuclear generation in Oregon or any other states. Nuclear employment shows support services for existing nuclear generation in other states. These support services are assumed to stay the same throughout the study years.

REFERENCE SCENARIO **OUTPUTS, NUCLEAR**, EAST OREGON



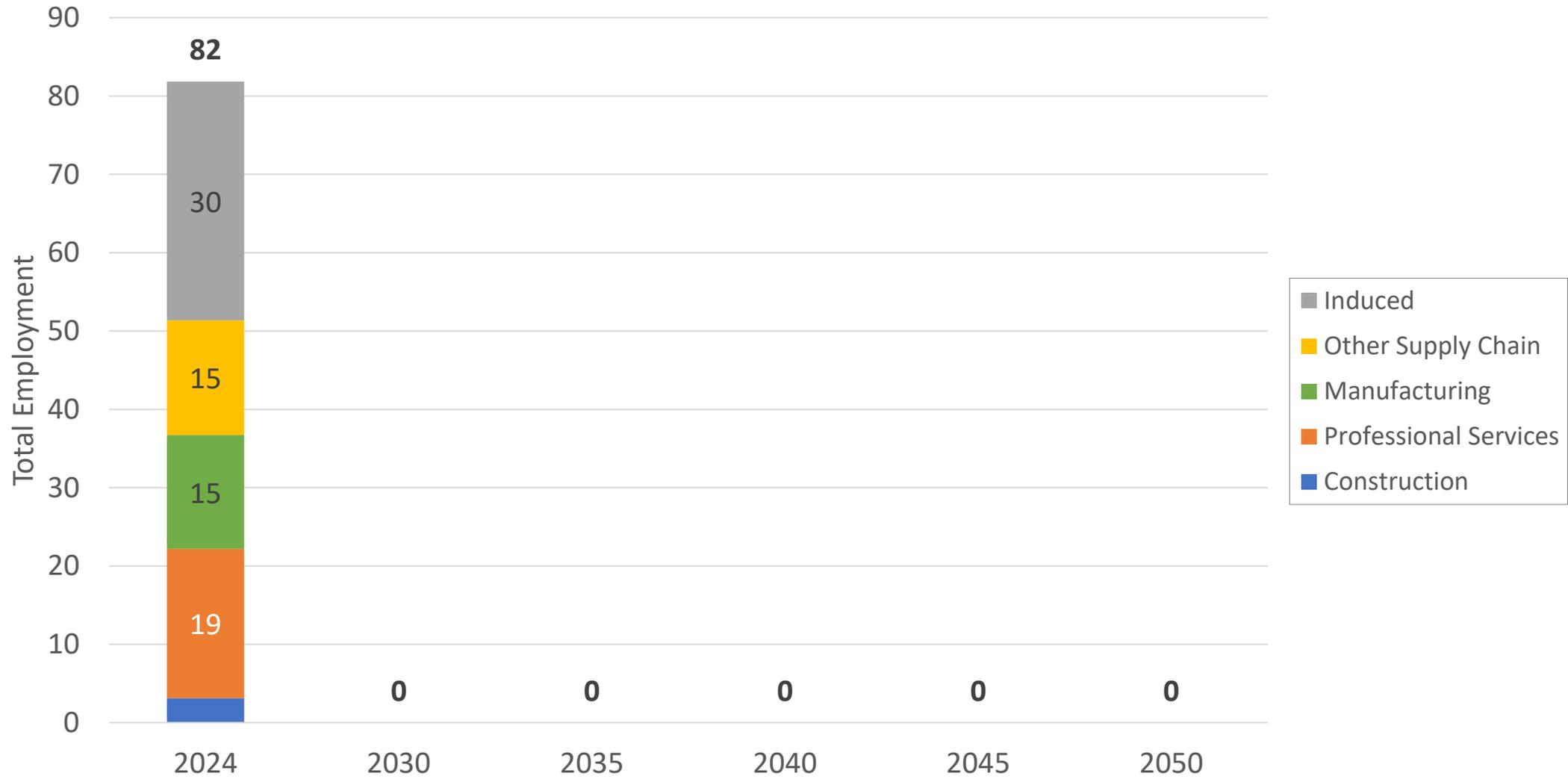
REFERENCE SCENARIO INPUTS, OTHER FOSSIL GENERATION, EAST OREGON

Total Investment (\$MM)

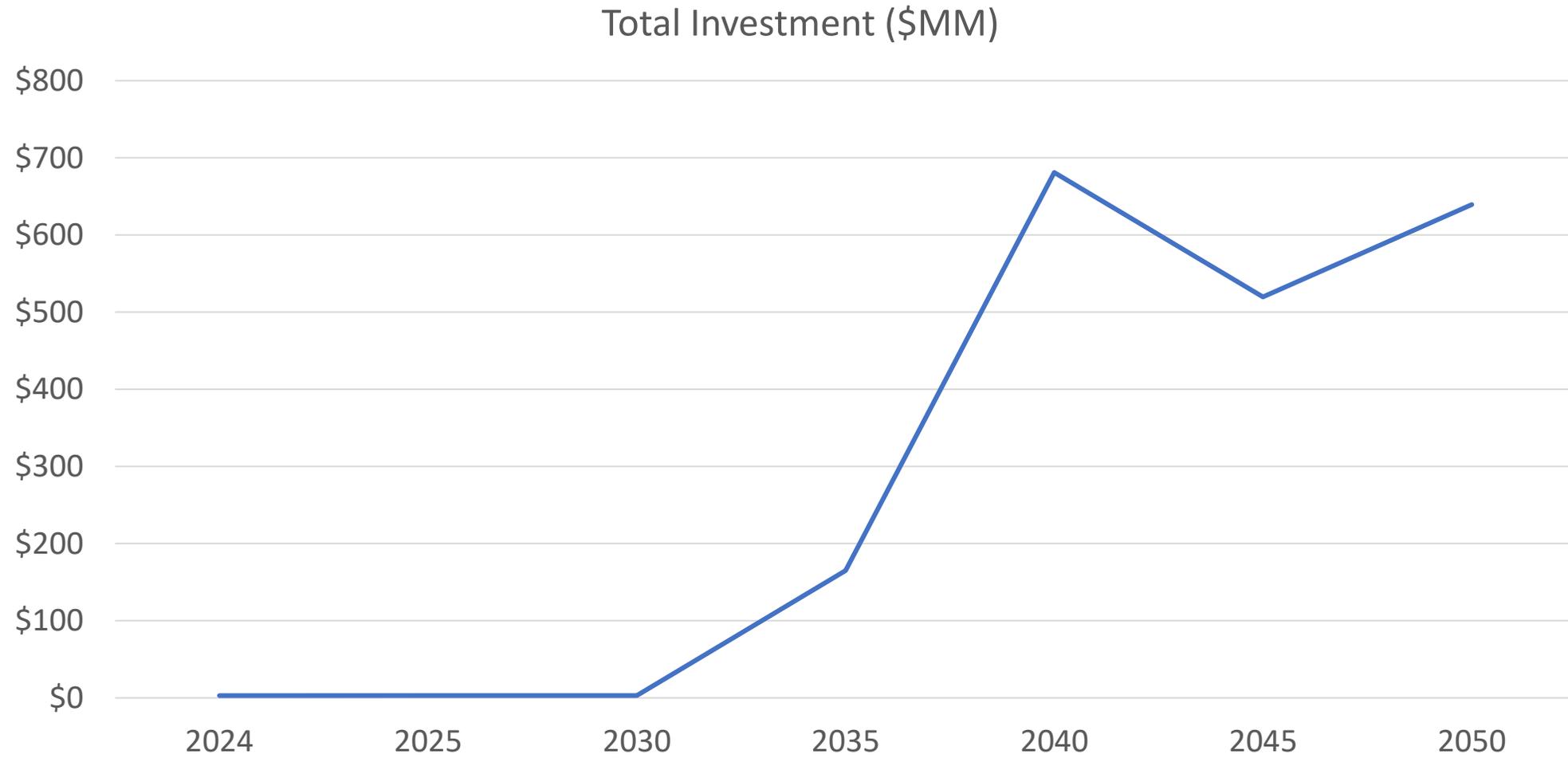


The EER model did not build petroleum or coal generation in Oregon. Other fossil generation employment shows support services for existing coal generation in neighboring states. These support services are assumed to decline with retirements throughout the study years, though there is uncertainty.

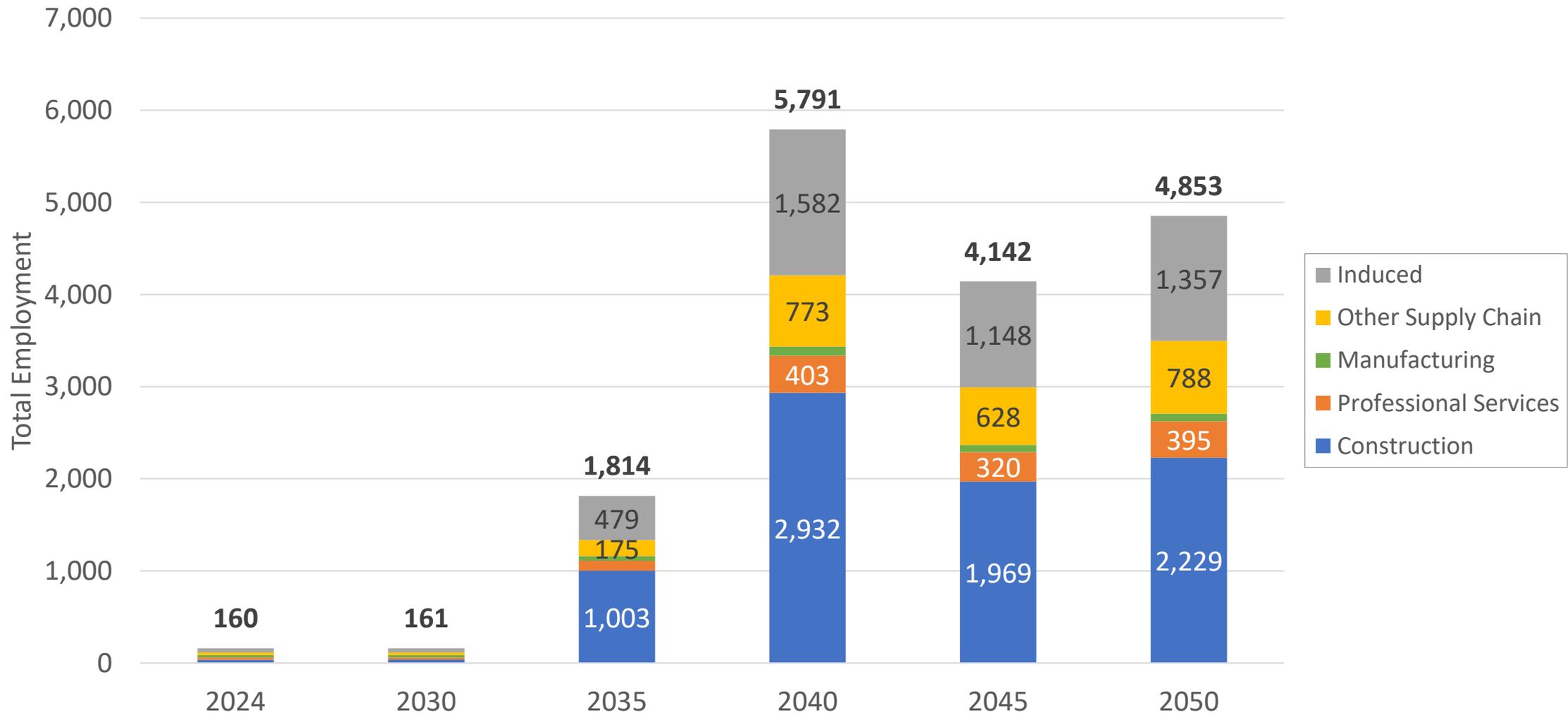
REFERENCE SCENARIO OUTPUTS, OTHER FOSSIL GENERATION, EAST OREGON



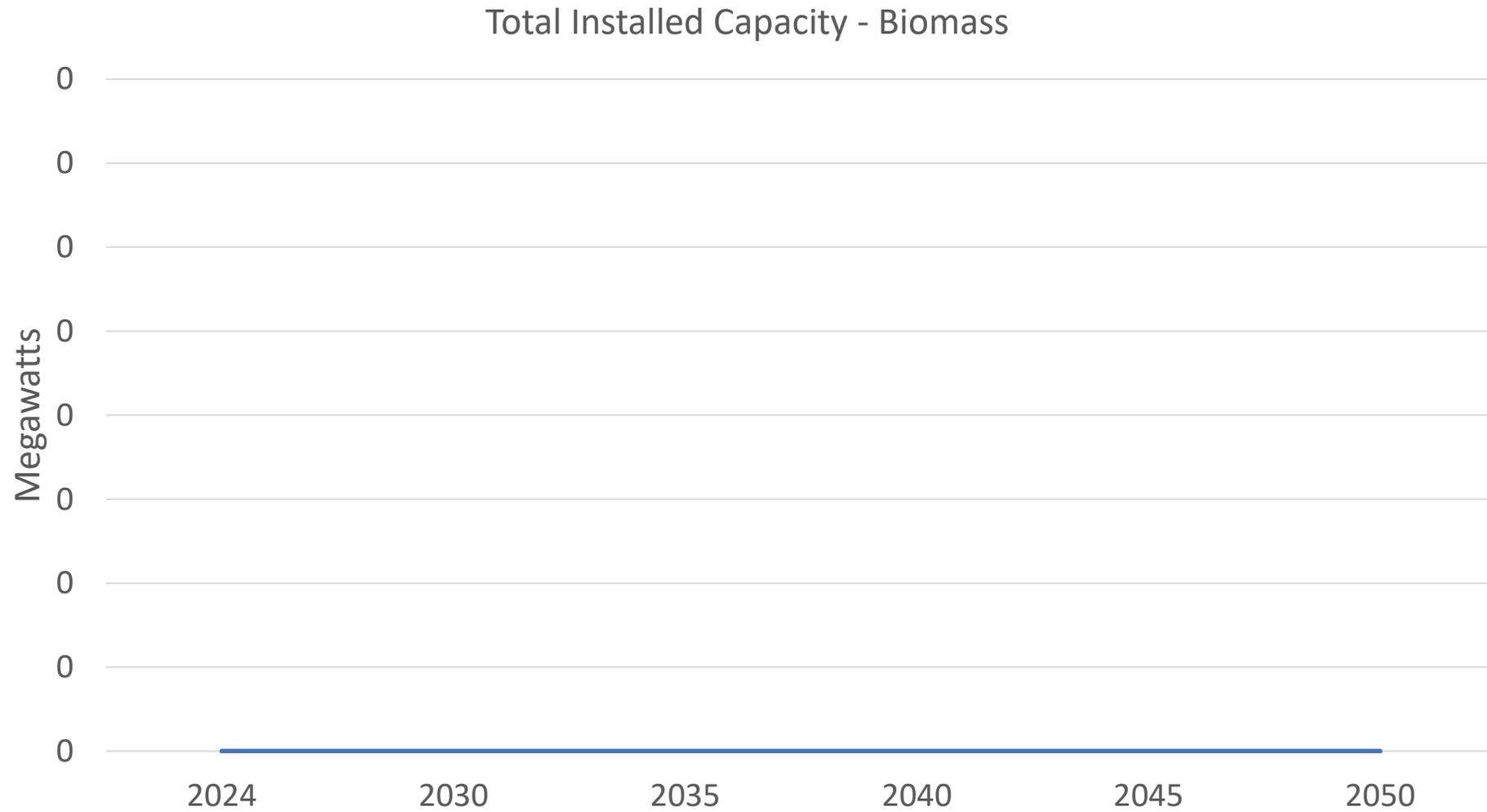
REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - GEOTHERMAL, EAST OREGON



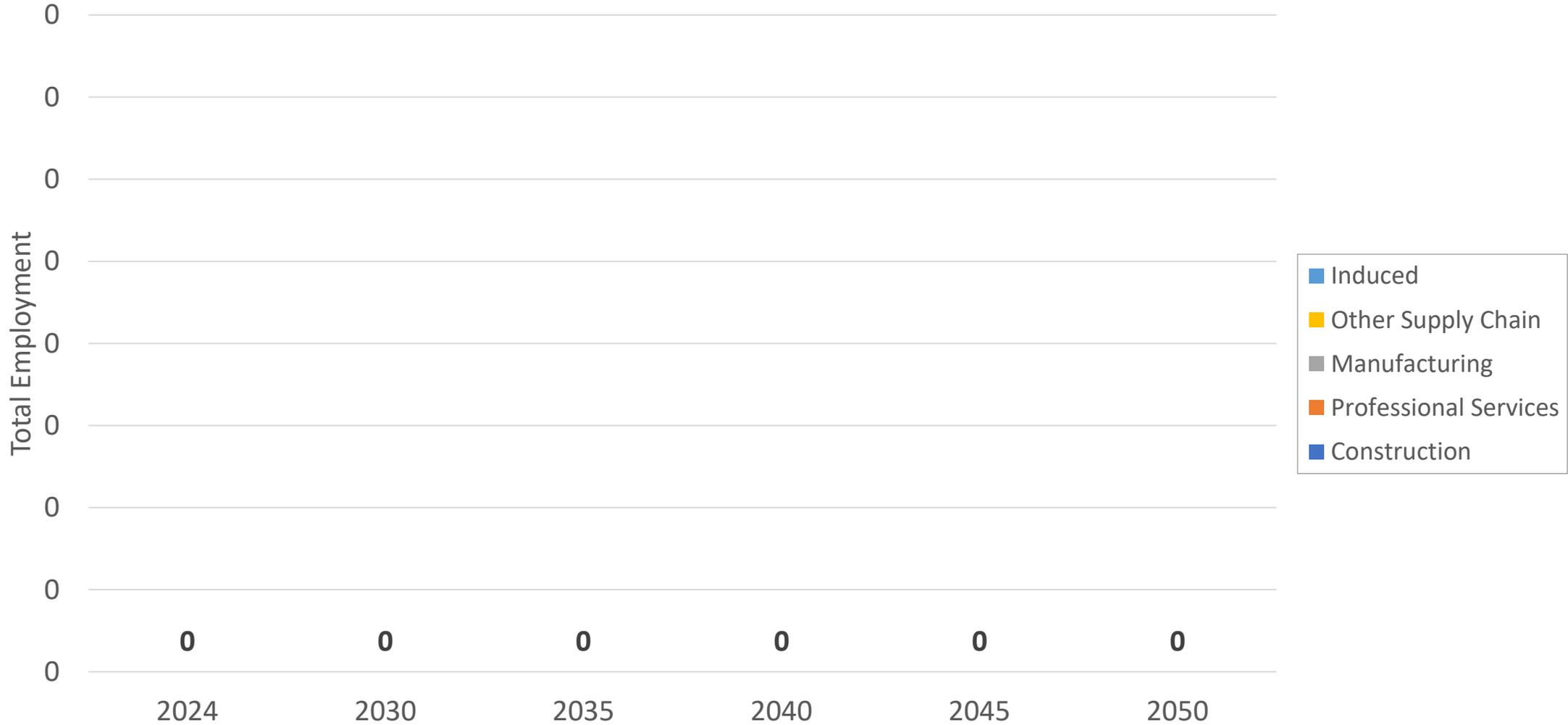
REFERENCE SCENARIO, OTHER RENEWABLE GENERATION – GEOTHERMAL, EAST OREGON



REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - BIOMASS, EAST OREGON

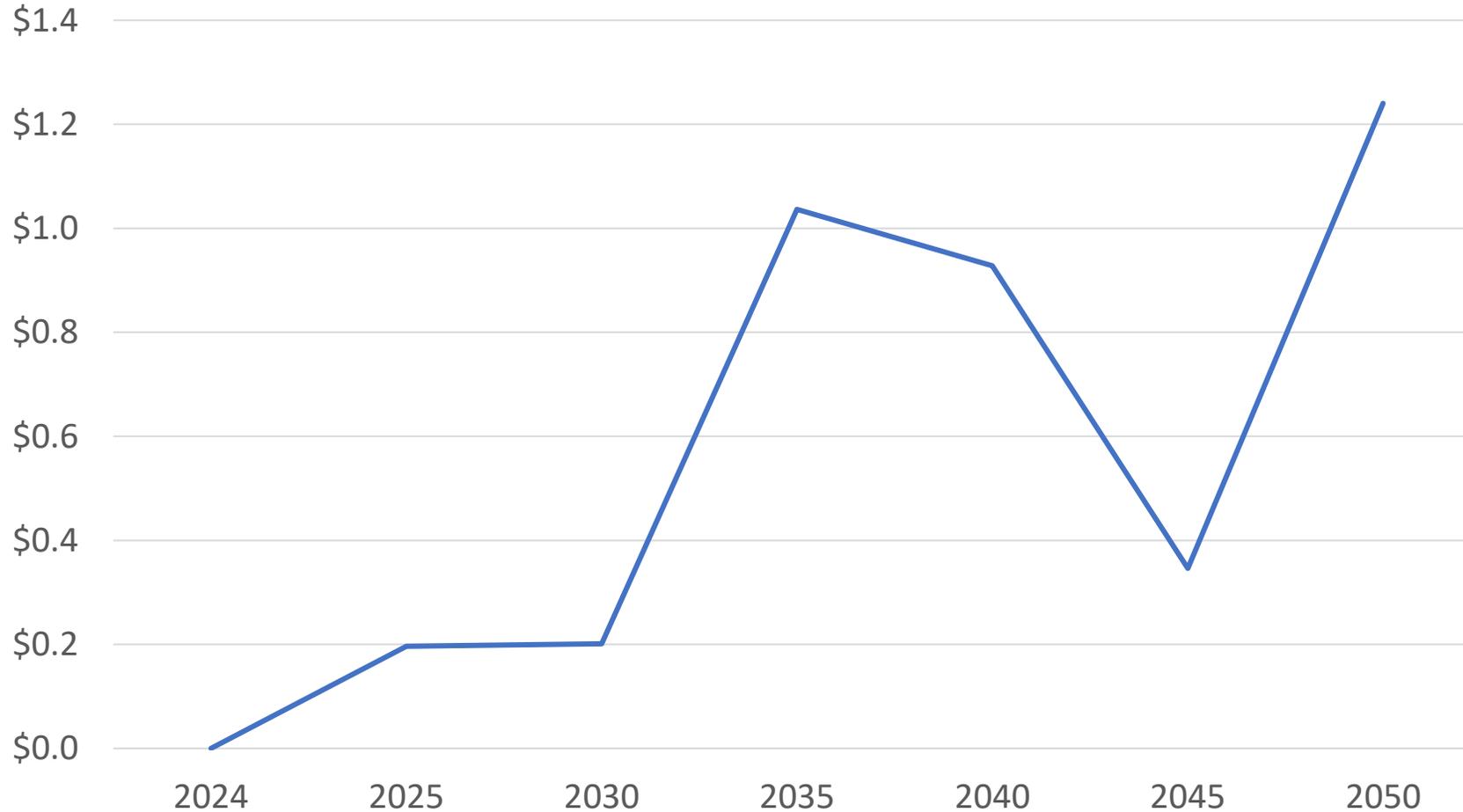


REFERENCE SCENARIO OUTPUTS, OTHER RENEWABLE GENERATION – BIOMASS, EAST OREGON



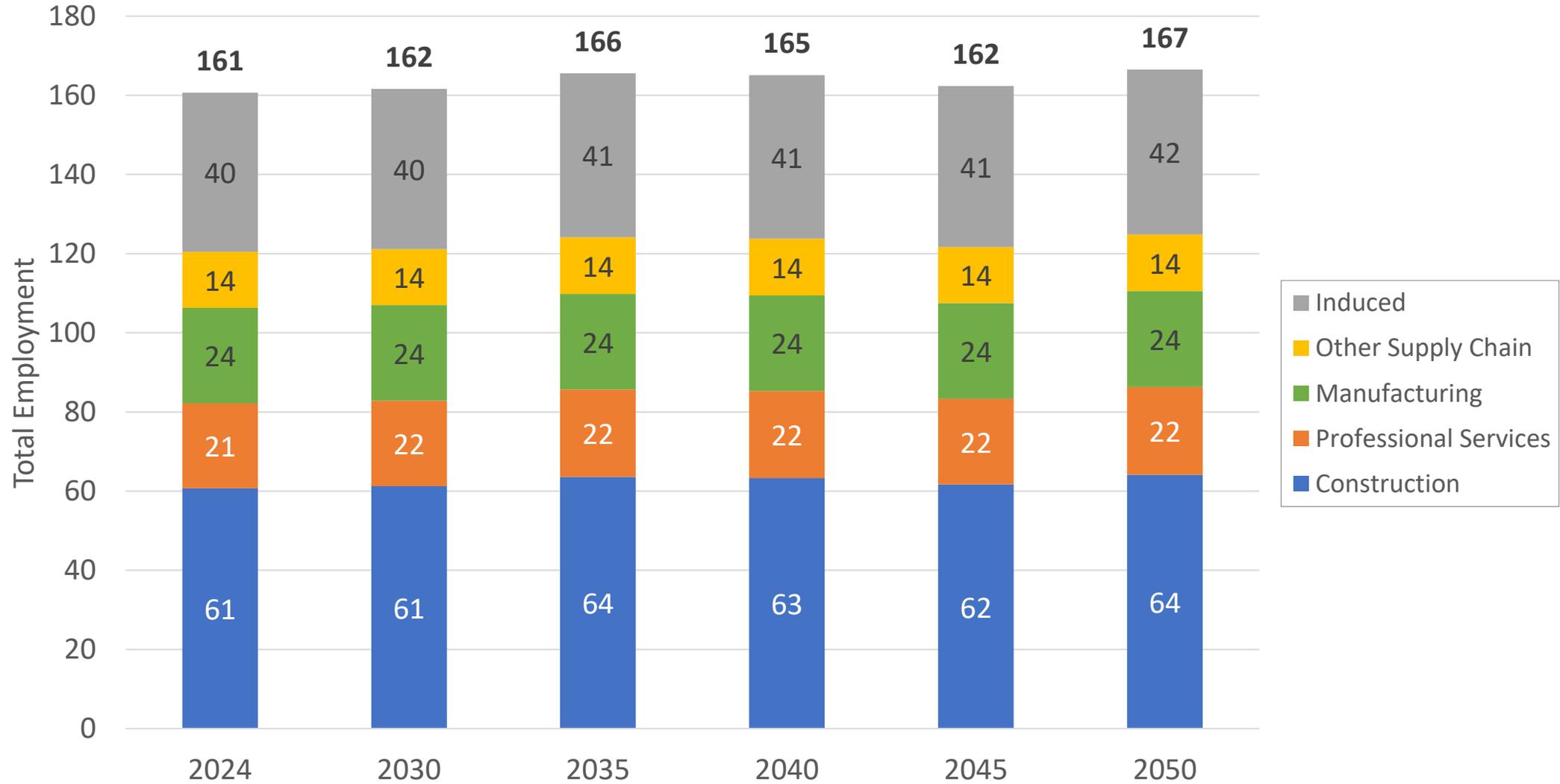
REFERENCE SCENARIO **INPUTS, STORAGE**, EAST OREGON

Total Investment (\$MM)



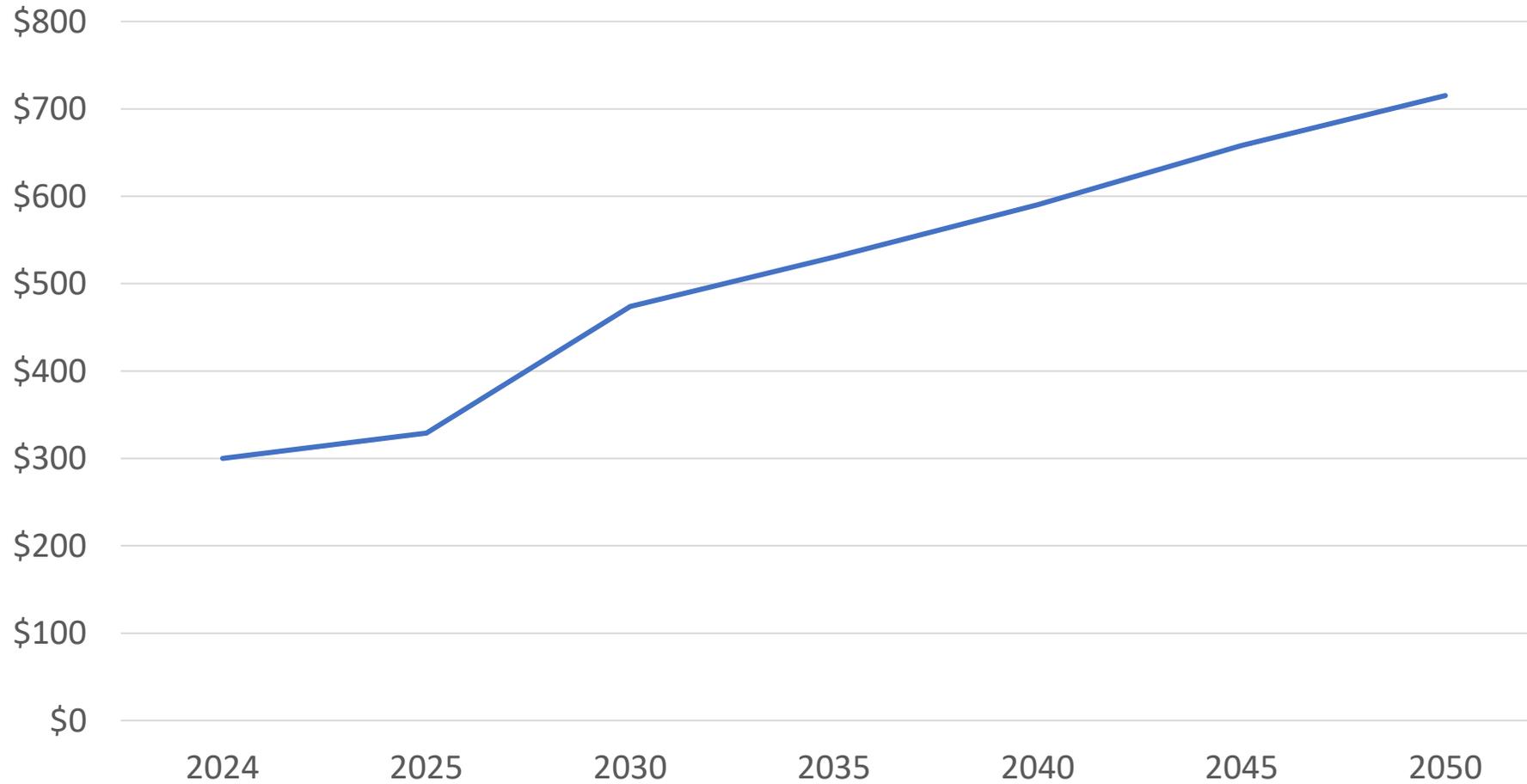
The investment for Storage found by the EER model is incremental to existing Storage capacity. The baseline for 2024 is shown as \$0.

REFERENCE SCENARIO **OUTPUTS, STORAGE**, EAST OREGON



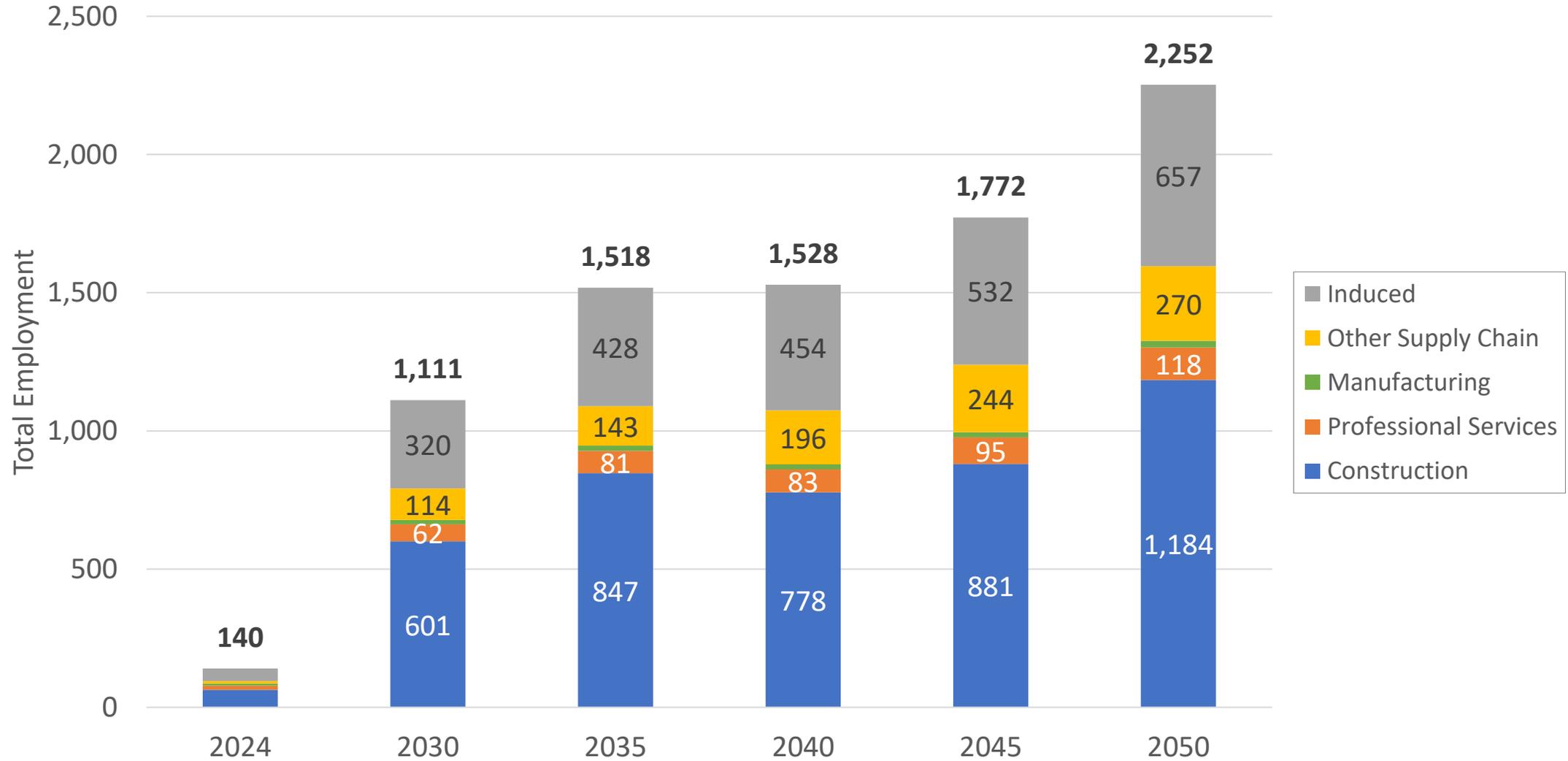
REFERENCE SCENARIO INPUTS, TRANSMISSION, EAST OREGON

Total Investment (\$MM)



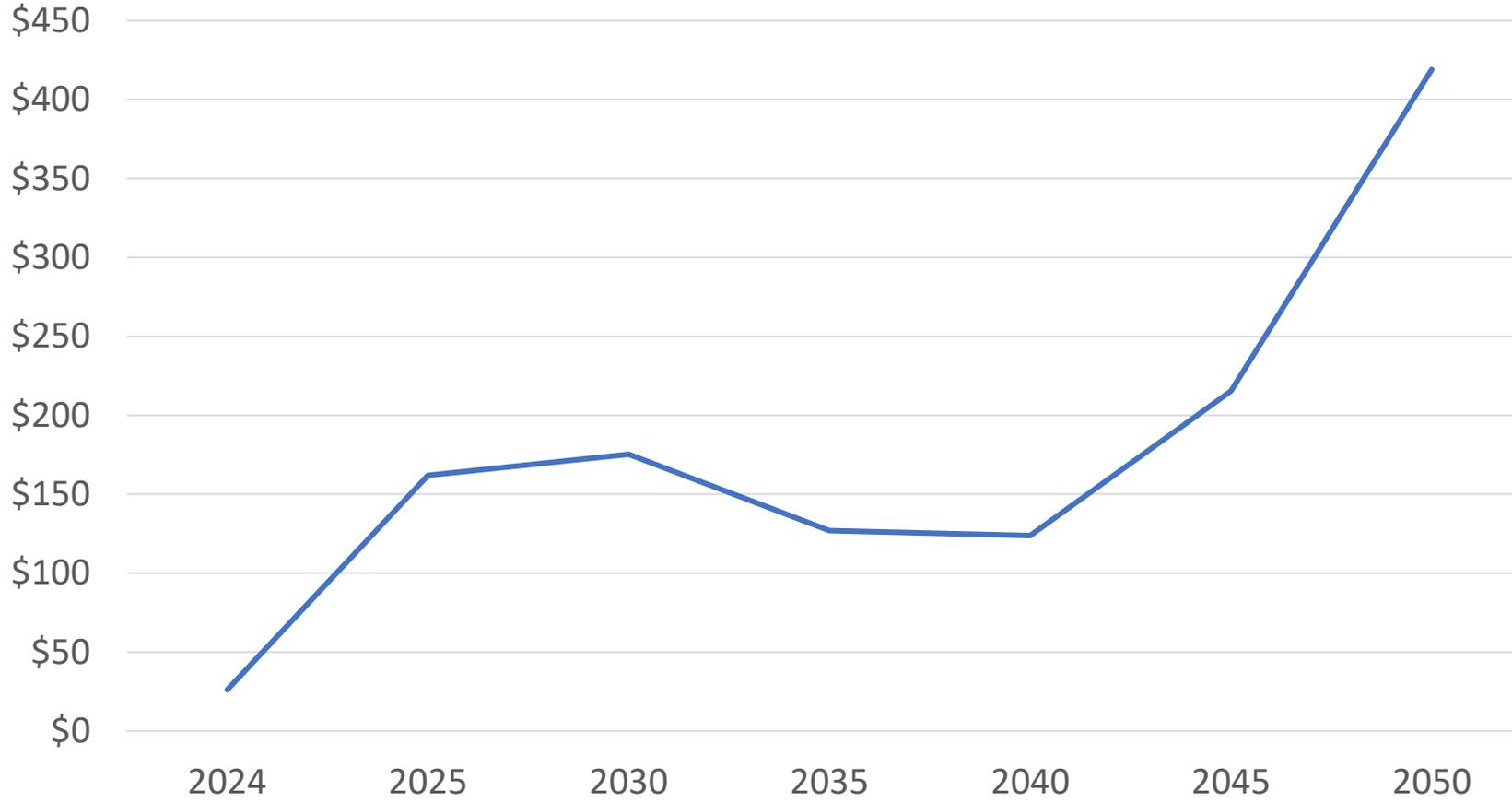
Investments include both [intra- and inter-zonal transmission](#) in East Oregon.

REFERENCE SCENARIO **OUTPUTS**, TRANSMISSION, EAST OREGON



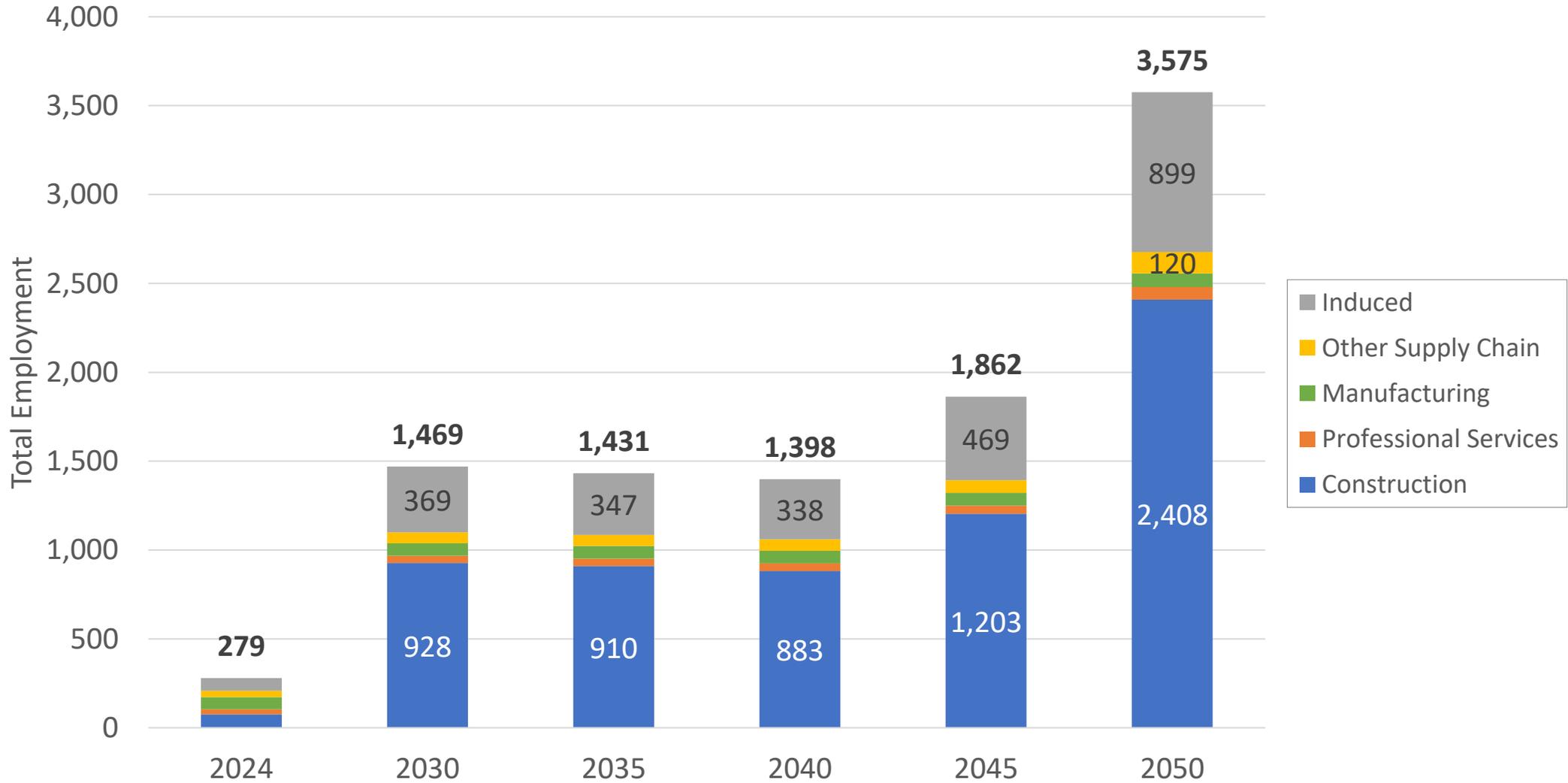
REFERENCE SCENARIO INPUTS, UTILITY SOLAR, EAST OREGON

Total Investment (\$MM)



Significant capital investments required to economically build out utility-scale solar electric generating capacity to meet load demand.

REFERENCE SCENARIO **OUTPUTS, UTILITY SOLAR, EAST OREGON**

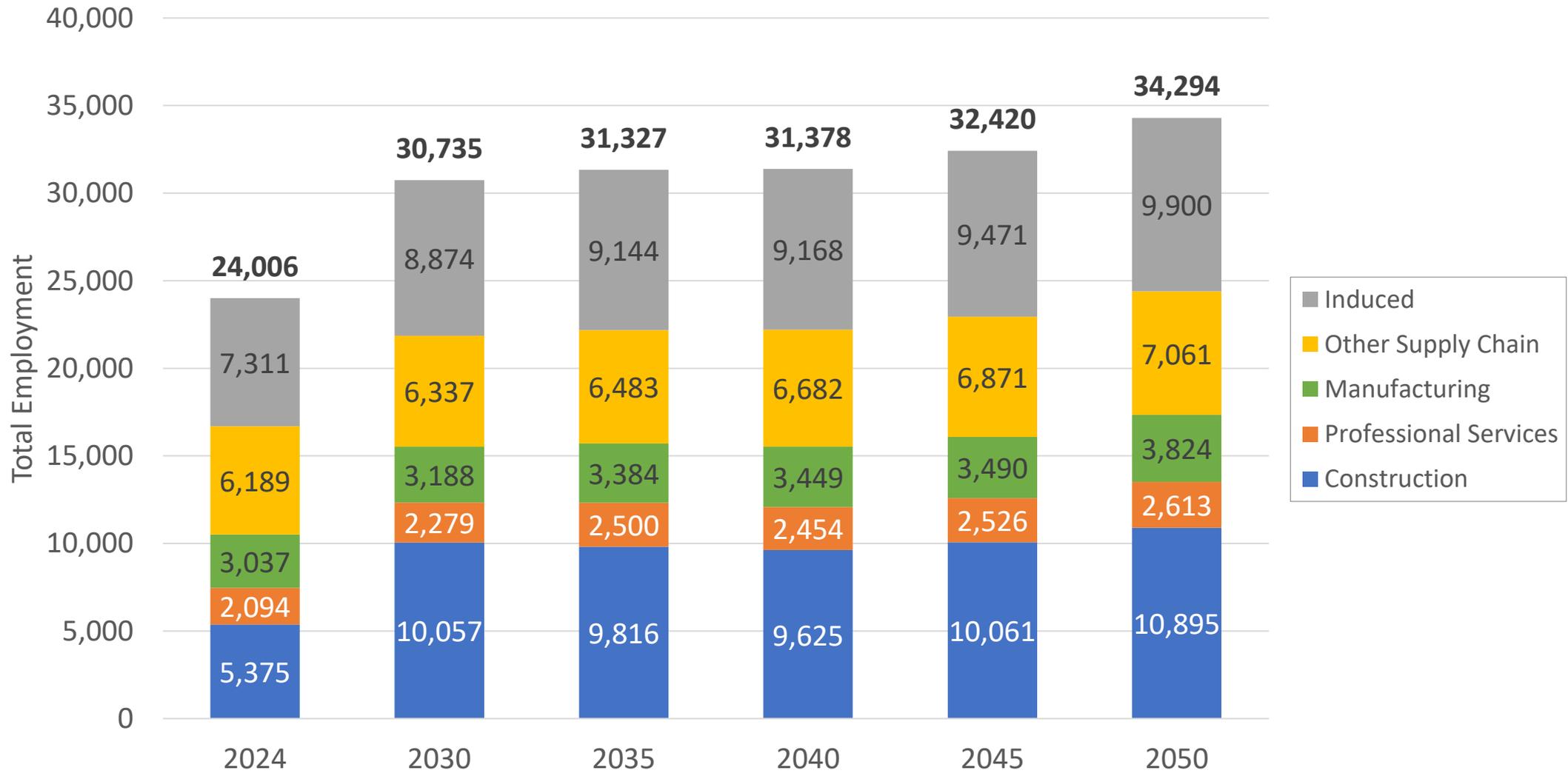


**ELECTRICITY: REFERENCE,
WEST OREGON***

SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Distribution	7,960	10,185	10,686	11,295	11,874	12,231
Hydropower	2,494	3,236	2,621	2,617	2,616	2,616
Land-Based Wind	1,692	2,171	2,675	3,023	3,259	4,459
Gas Generation	497	497	1,932	1,077	1,264	948
Nuclear	347	347	347	347	347	347
Other Ren. Gen. – Geothermal	0	0	0	0	0	0
Storage	1,884	1,963	1,889	1,889	1,888	1,894
Transmission	2,079	3,270	3,909	3,926	4,363	5,139
Utility Solar	1,009	3,399	1,441	1,445	1,227	1,227
Distributed Solar	5,068	5,274	5,474	5,406	5,349	5,200
Sub-total	23,031	30,342	30,975	31,025	32,188	34,061
Change		7,311	7,944	7,994	9,157	11,030
Displacement Sub-Sectors						
Other Fossil Generation	345	41	0	0	0	0
Other Ren. Gen. – Biomass	630	352	352	353	232	233
Sub-total	975	393	352	353	232	233
Change		-582	-623	-622	-743	-742
Electricity OVERALL	24,006	30,735	31,327	31,378	32,420	34,294
Net Change from 2024		6,729	7,321	7,372	8,414	10,288

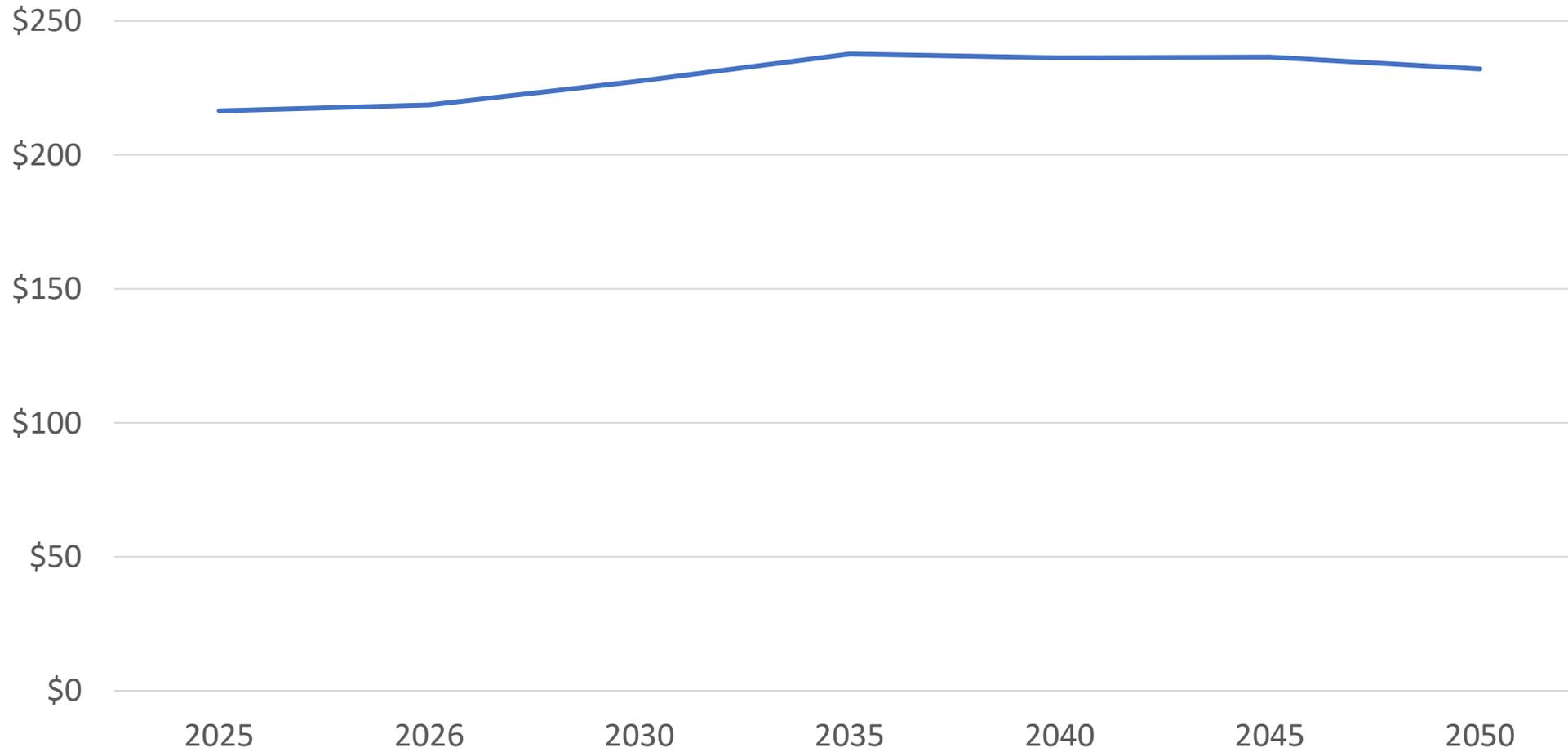
**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

REFERENCE SCENARIO, ELECTRICITY – TOTALS, WEST OREGON

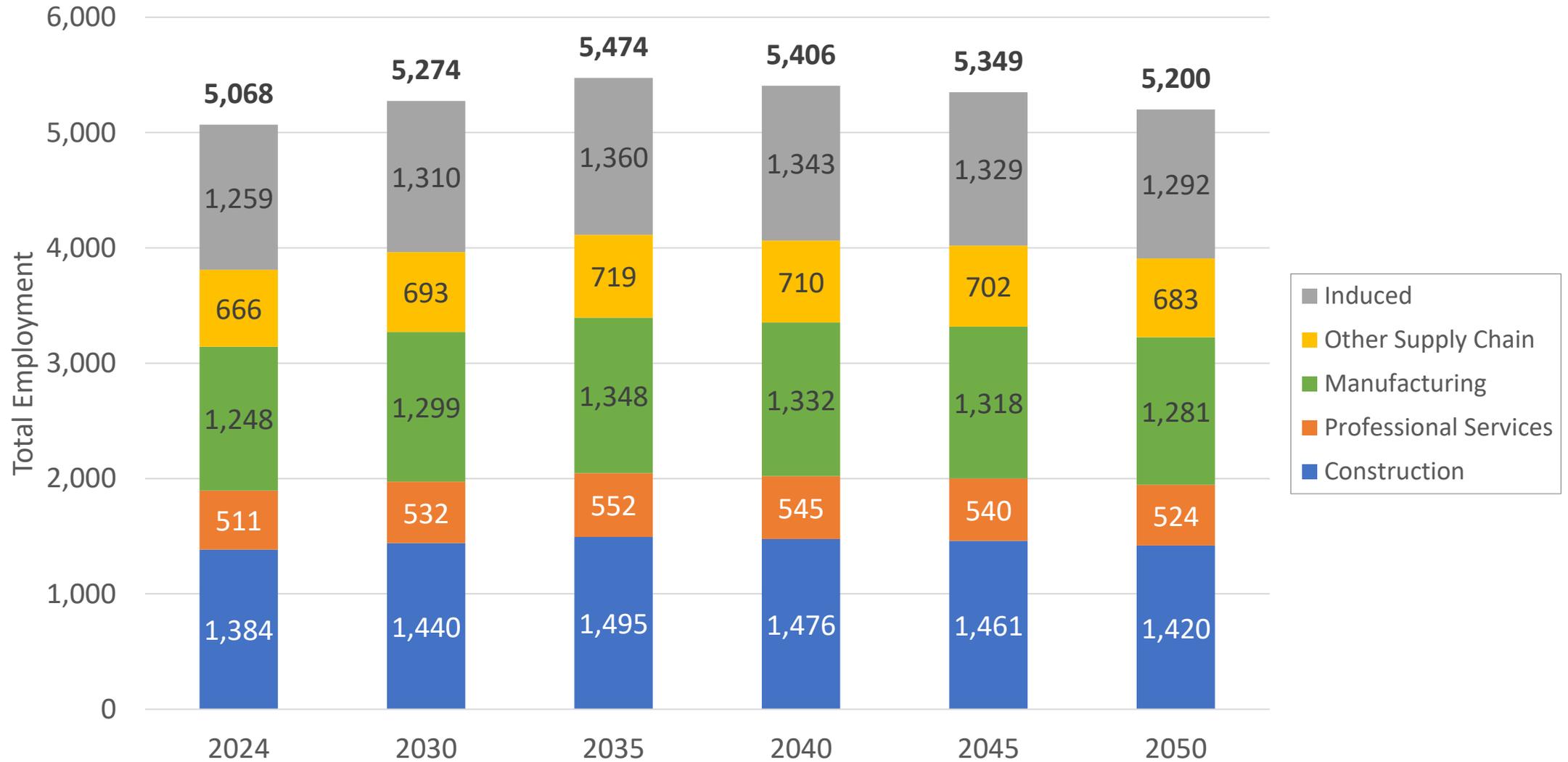


REFERENCE SCENARIO INPUTS, DISTRIBUTED SOLAR PV, WEST OREGON

Total Investment (\$MM)

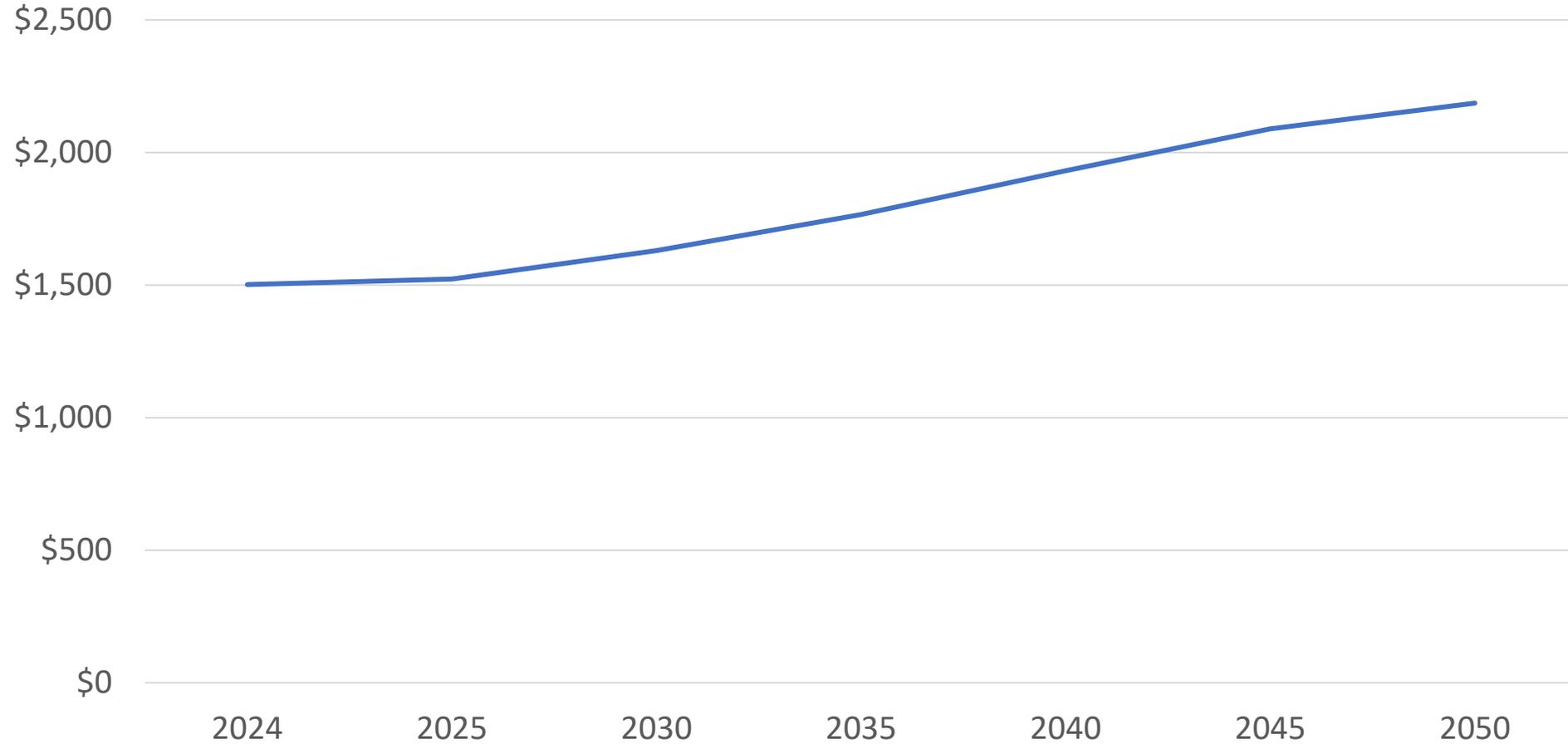


REFERENCE SCENARIO OUTPUTS, DISTRIBUTED SOLAR PV, WEST OREGON

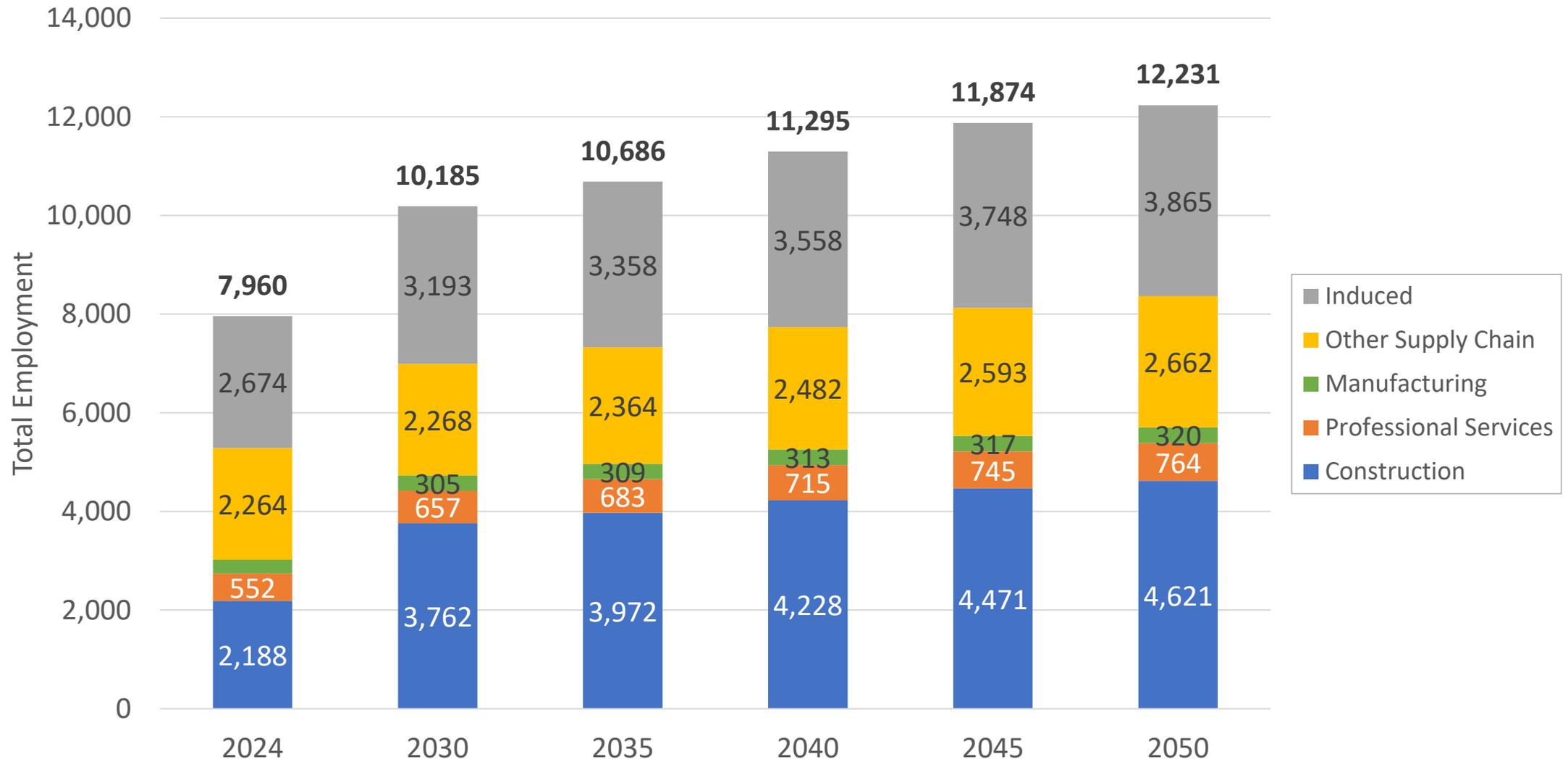


REFERENCE SCENARIO INPUTS, DISTRIBUTION, WEST OREGON

Total Investment (\$MM)

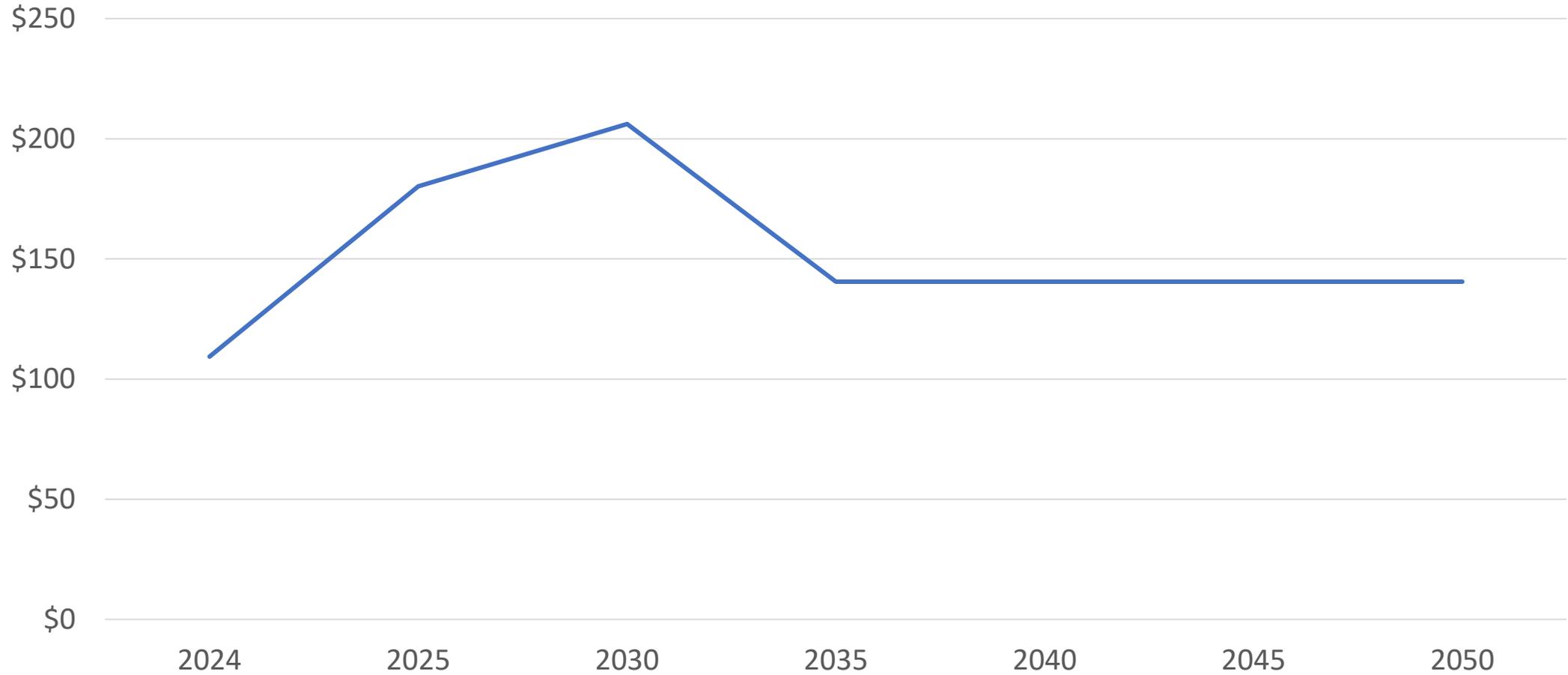


REFERENCE SCENARIO OUTPUTS, DISTRIBUTION, WEST OREGON

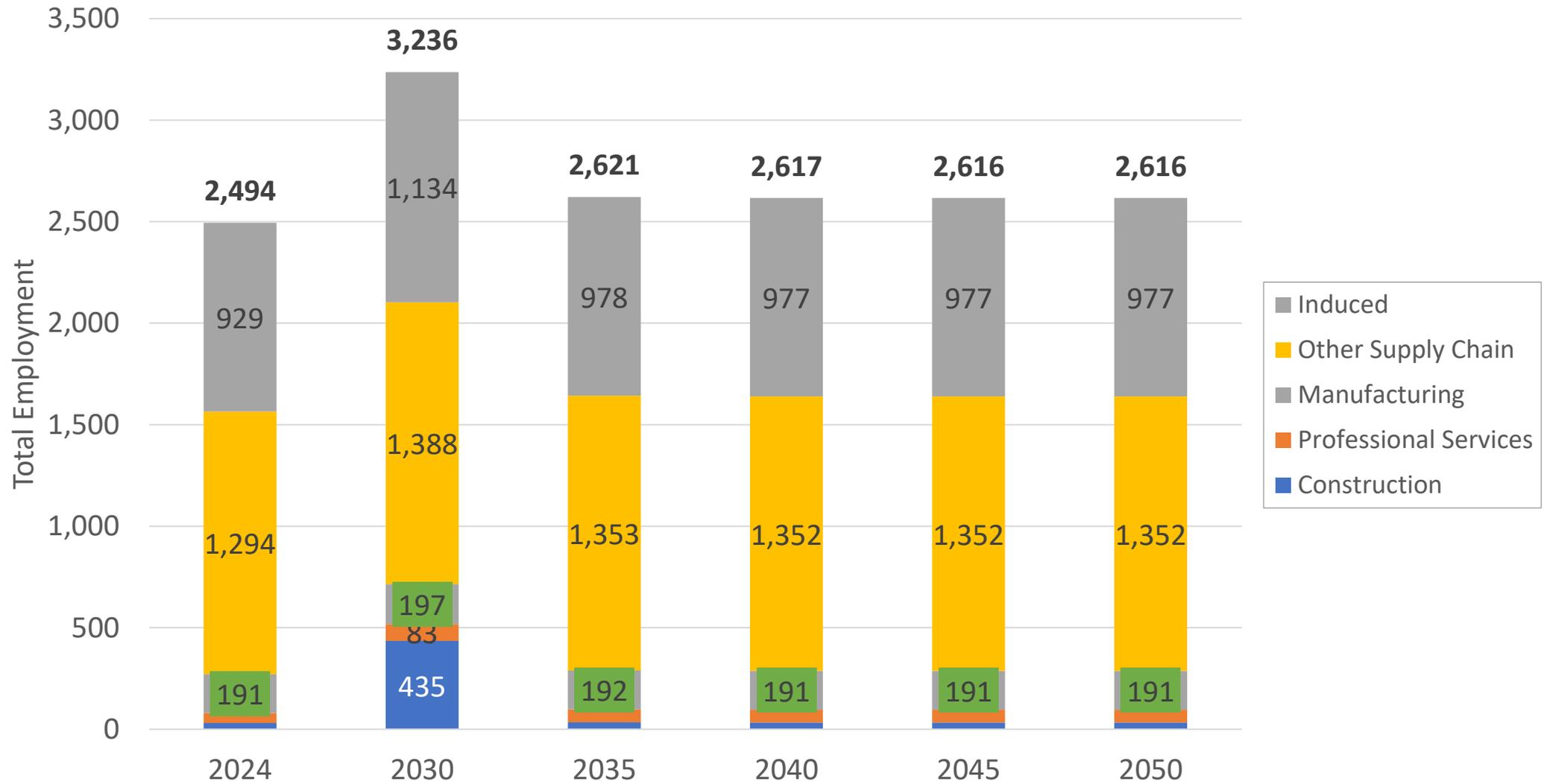


REFERENCE SCENARIO INPUTS, HYDROPOWER, WEST OREGON

Total Investment (\$MM)

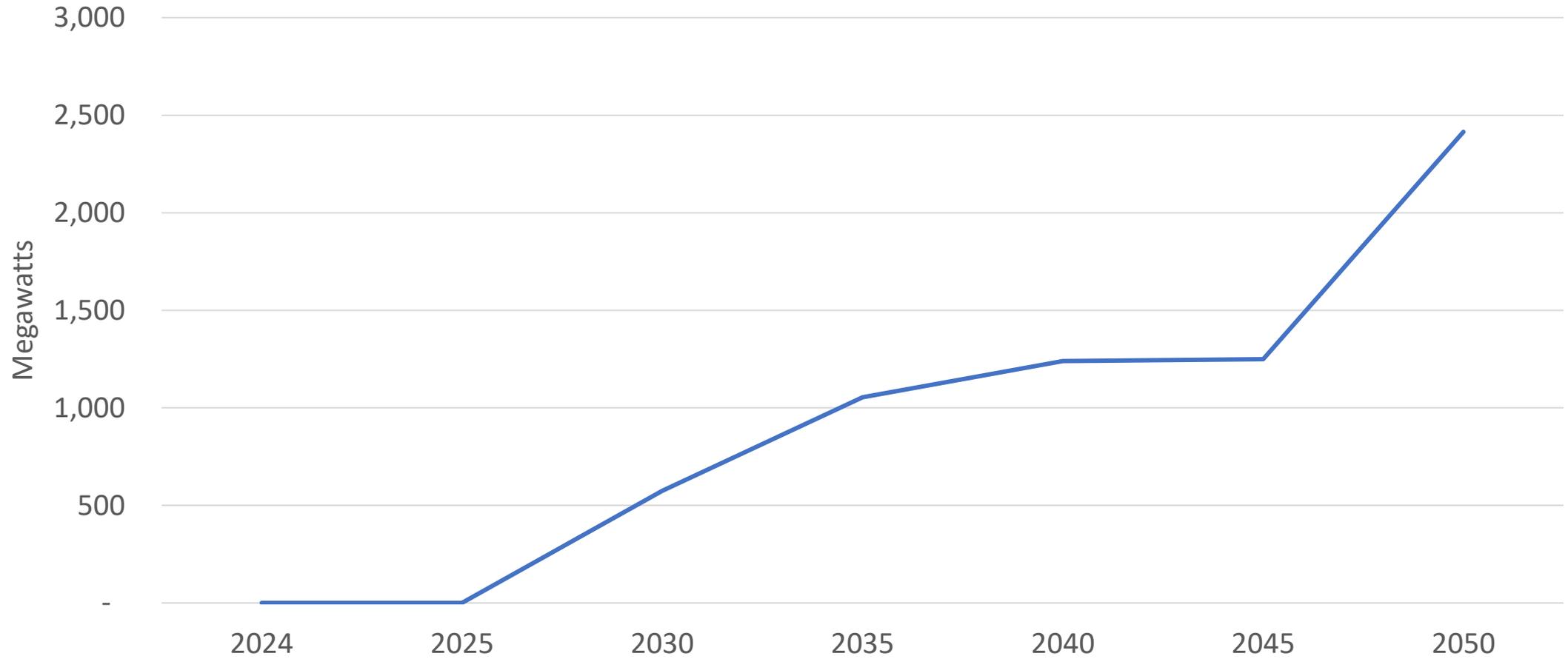


REFERENCE SCENARIO OUTPUTS, HYDROPOWER, WEST OREGON

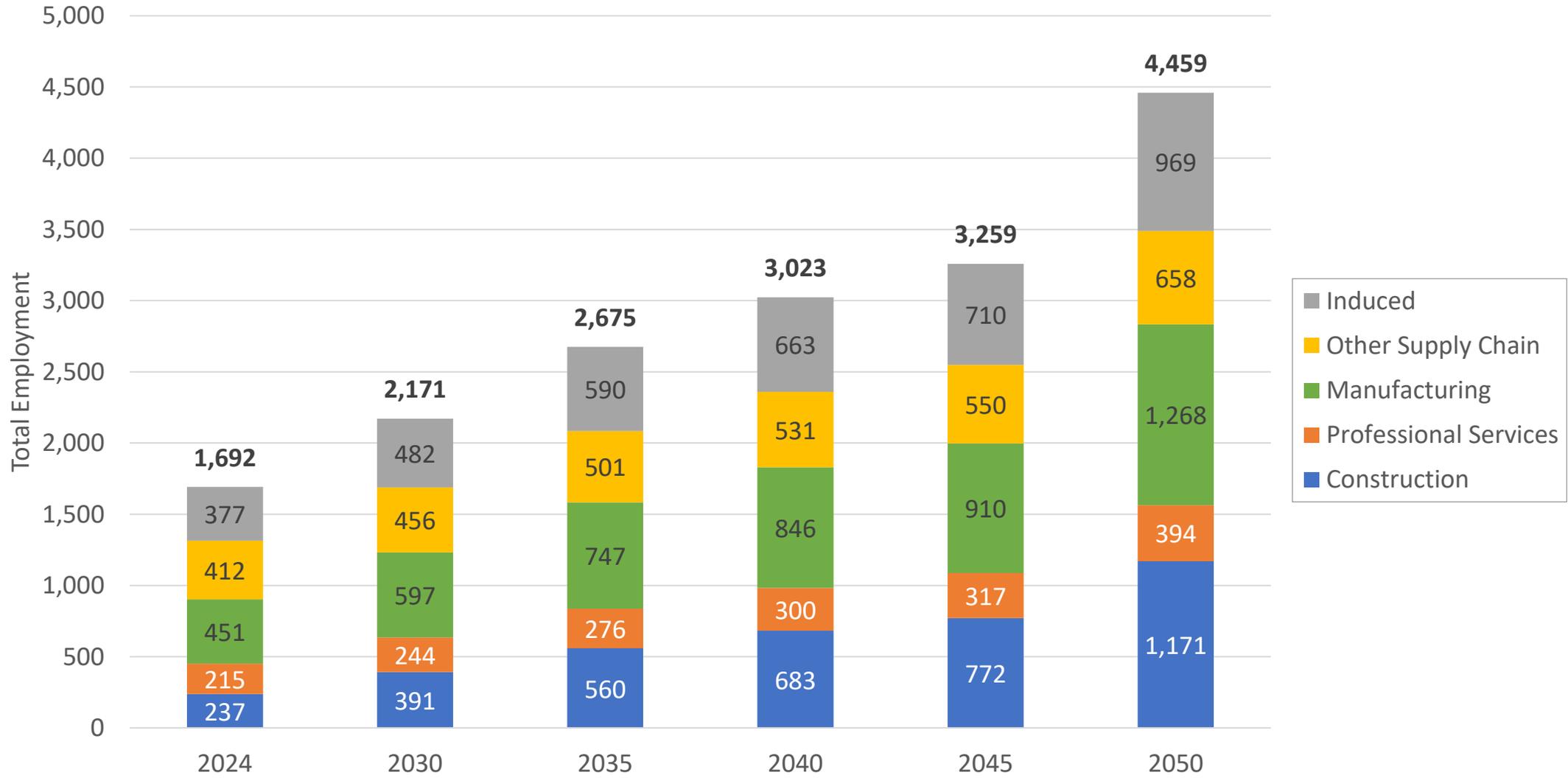


REFERENCE SCENARIO INPUTS, LAND-BASED WIND, WEST OREGON

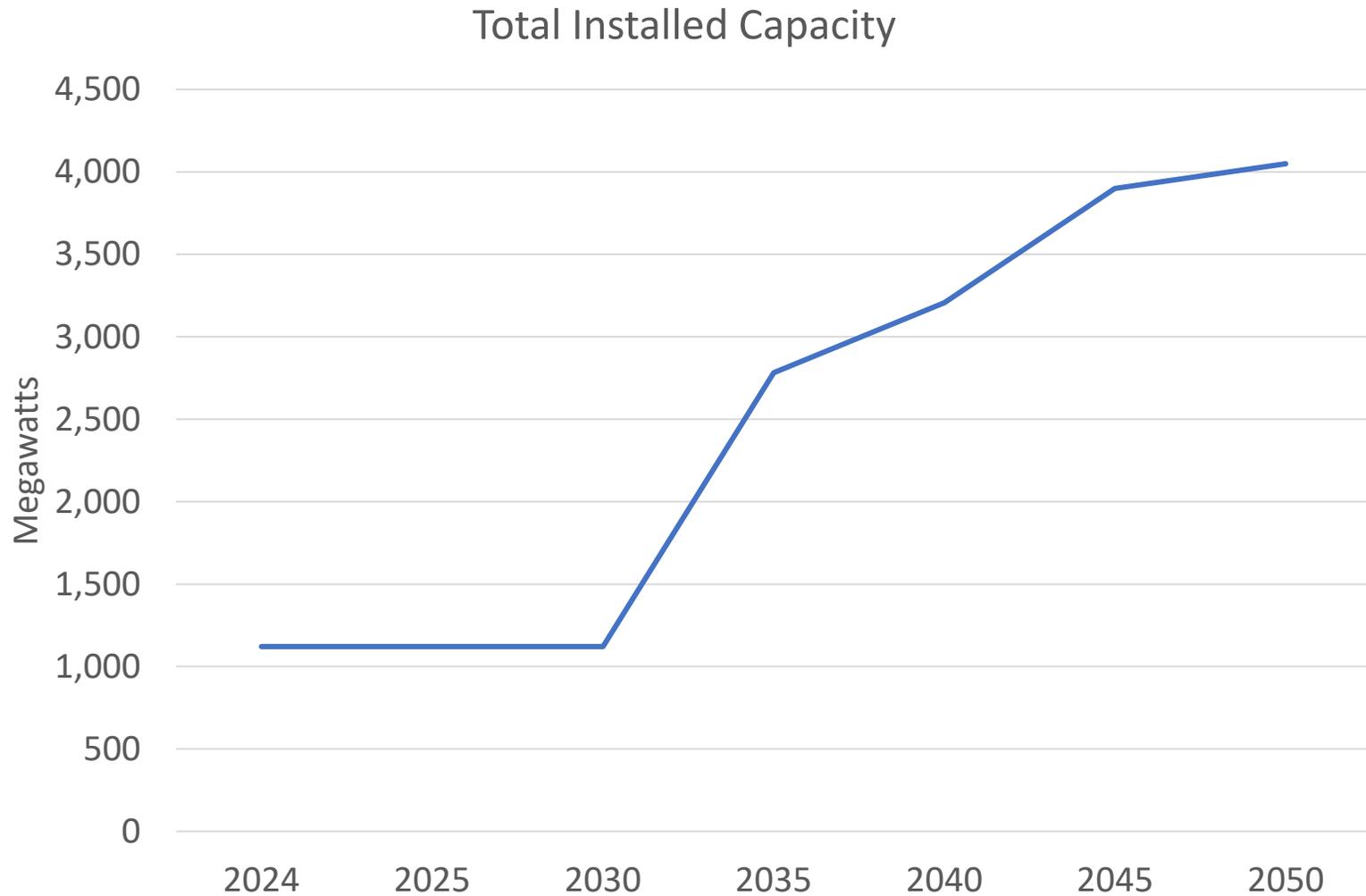
Total Installed Capacity



REFERENCE SCENARIO OUTPUTS, LAND-BASED WIND, WEST OREGON

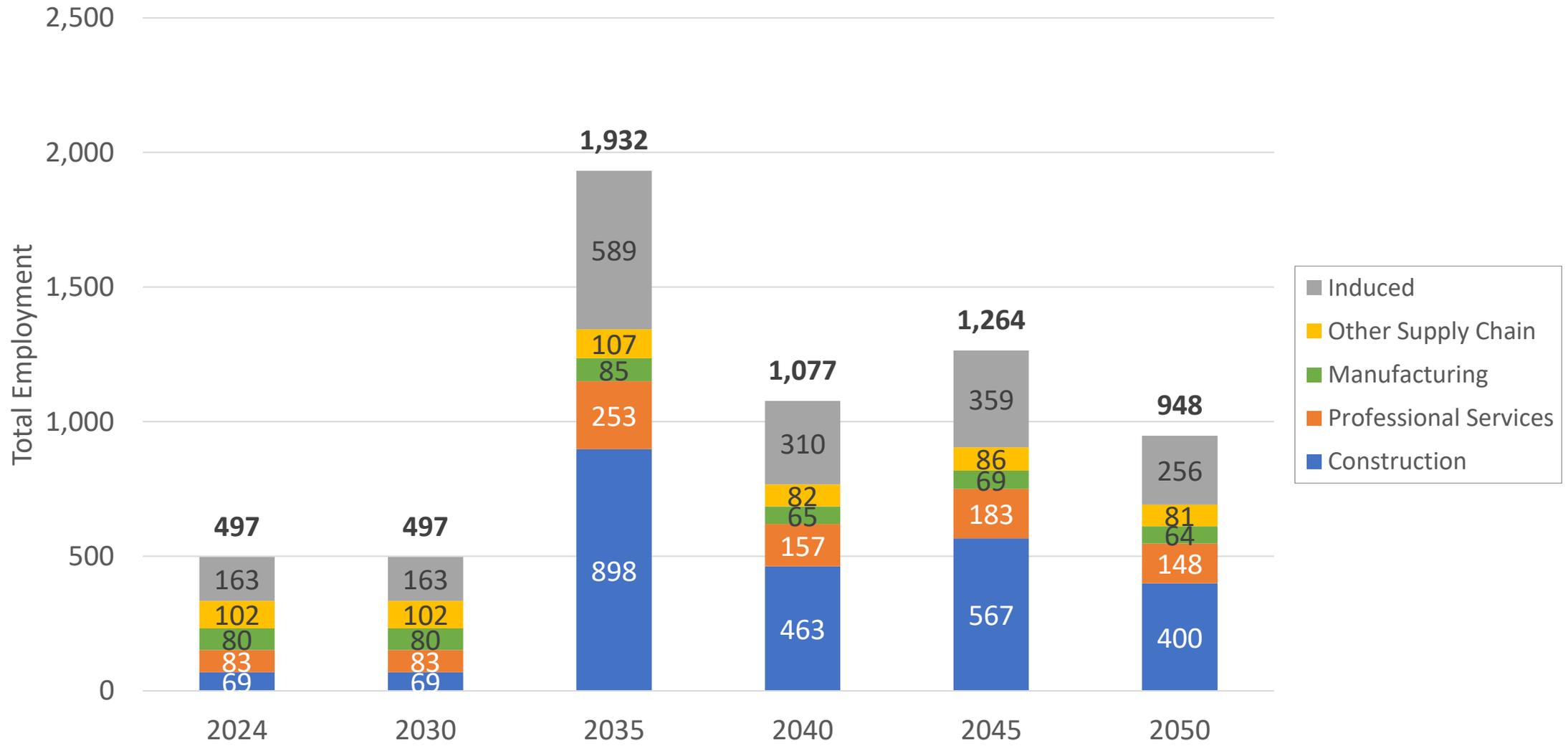


REFERENCE SCENARIO INPUTS, GAS GENERATION, WEST OREGON



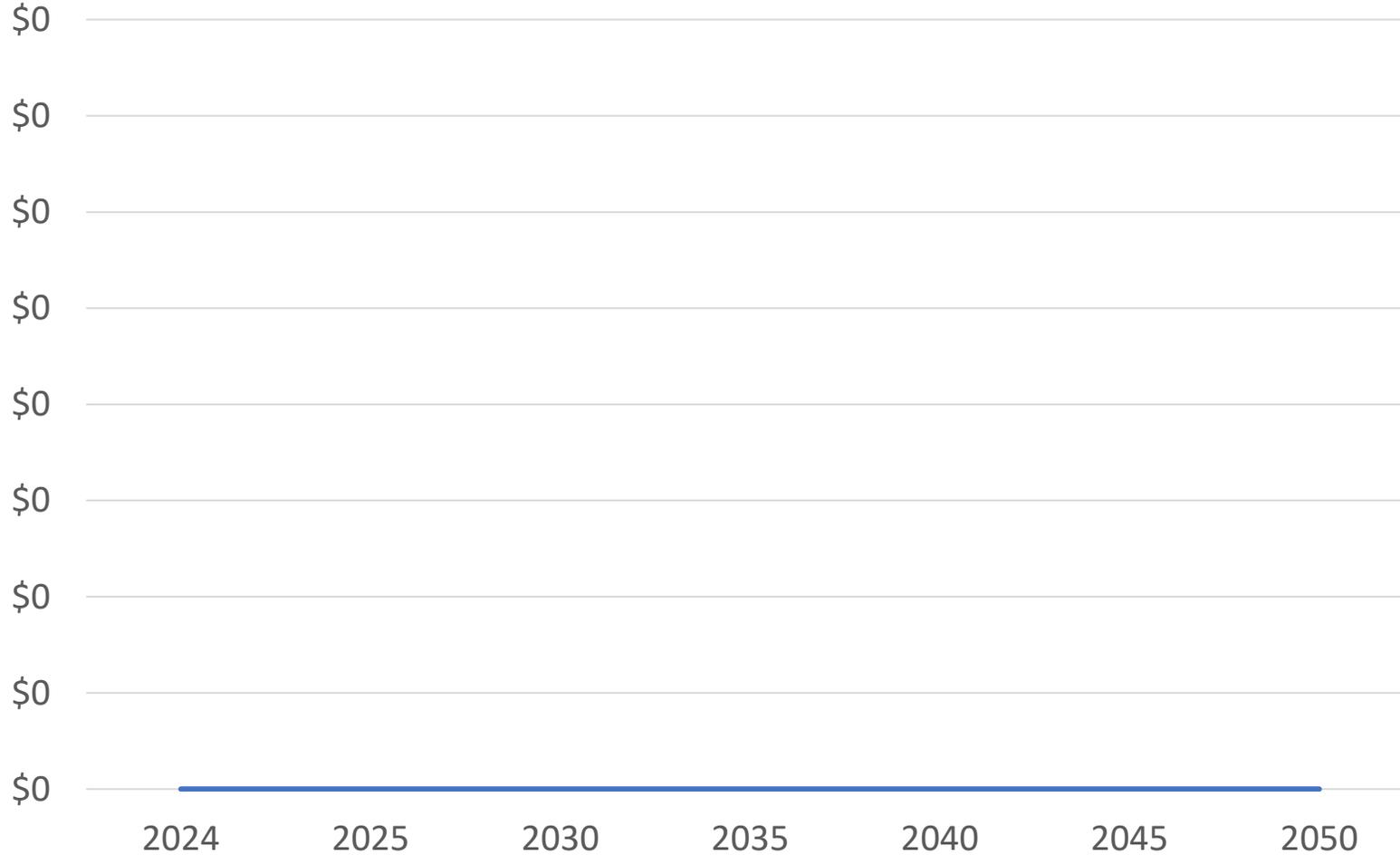
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REFERENCE SCENARIO OUTPUTS, GAS GENERATION, WEST OREGON



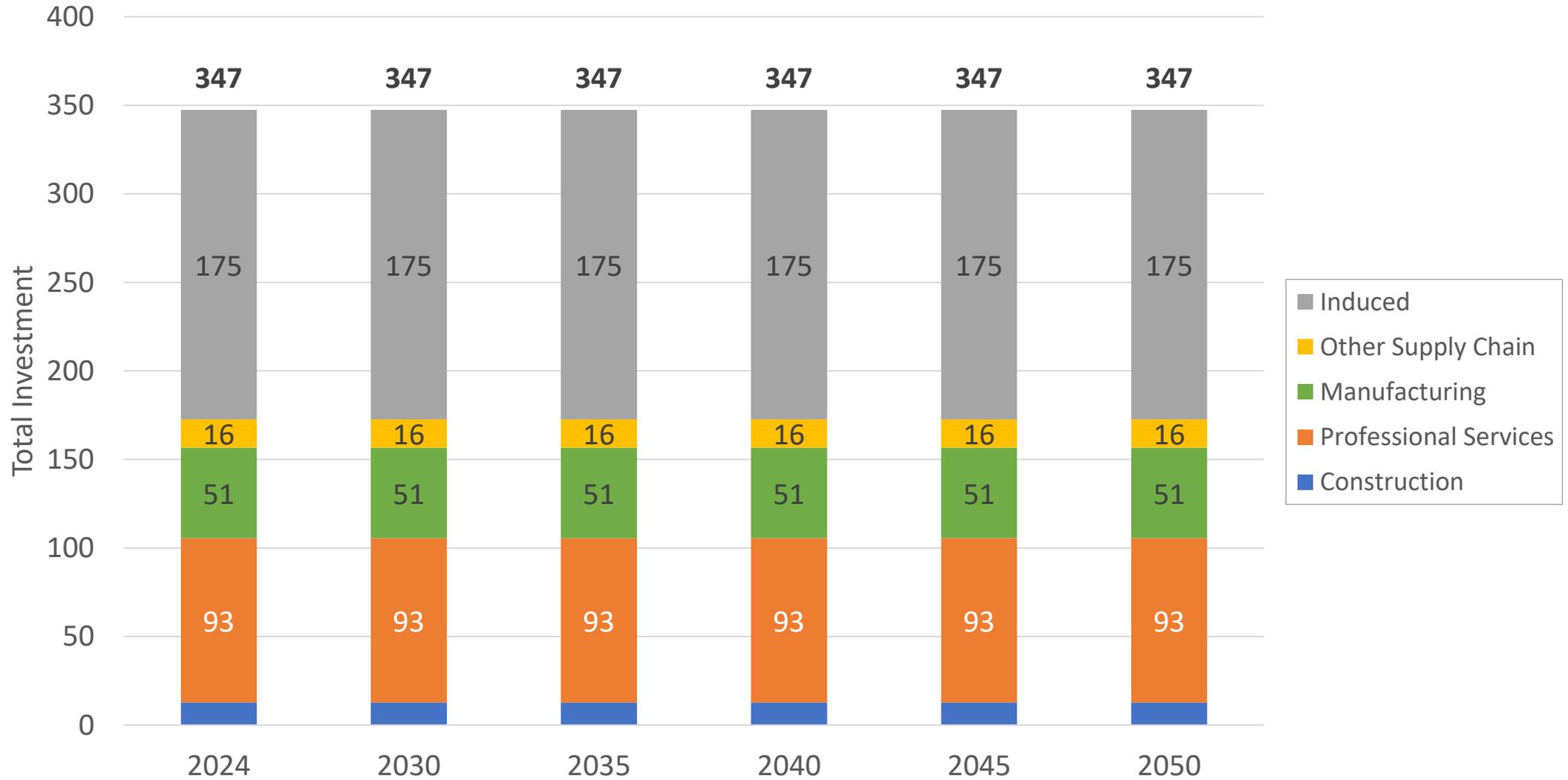
REFERENCE SCENARIO INPUTS, NUCLEAR, WEST OREGON

Total Investment (\$MM)



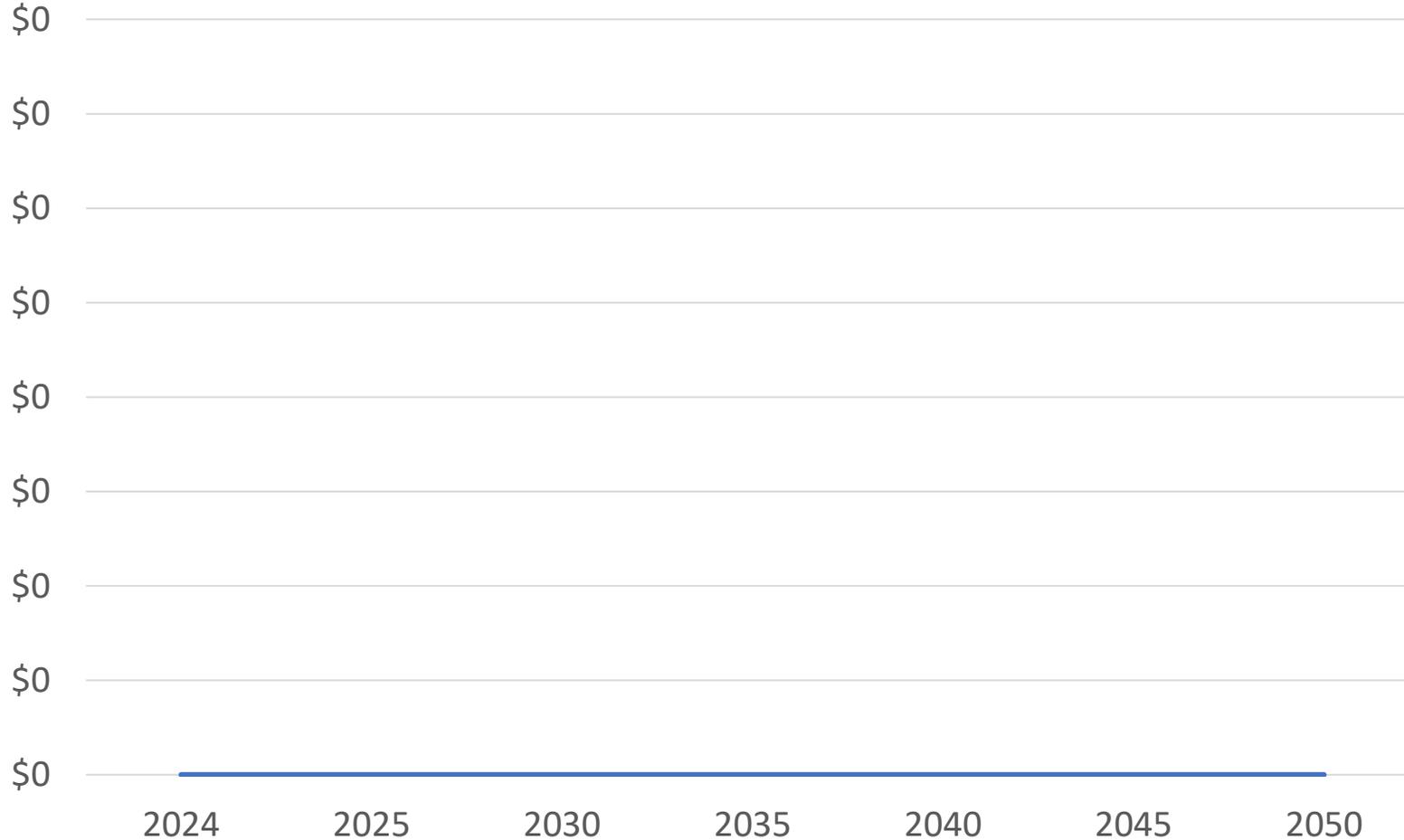
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REFERENCE SCENARIO **OUTPUTS, NUCLEAR**, WEST OREGON



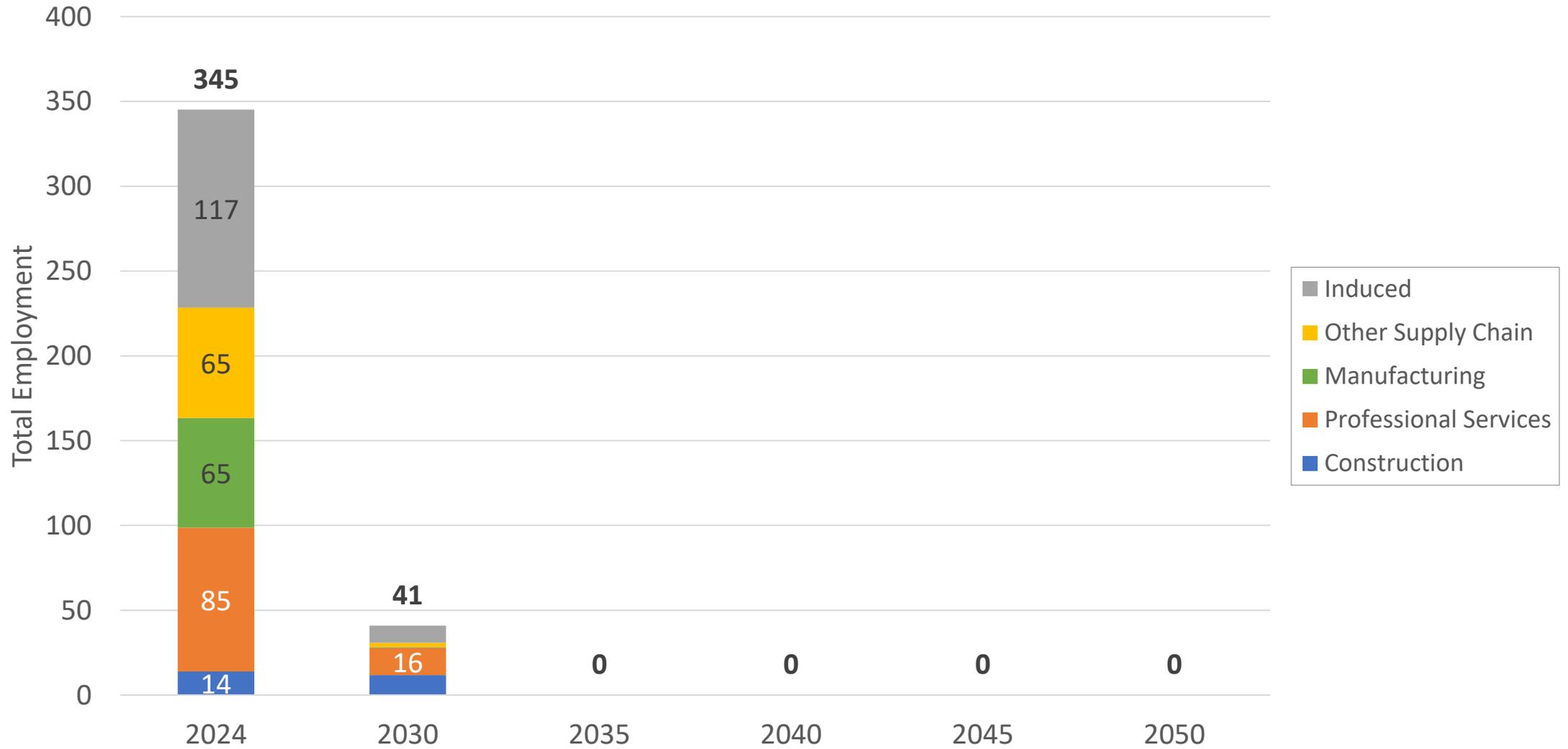
REFERENCE SCENARIO INPUTS, OTHER FOSSIL GENERATION, WEST OREGON

Total Investment (\$MM)

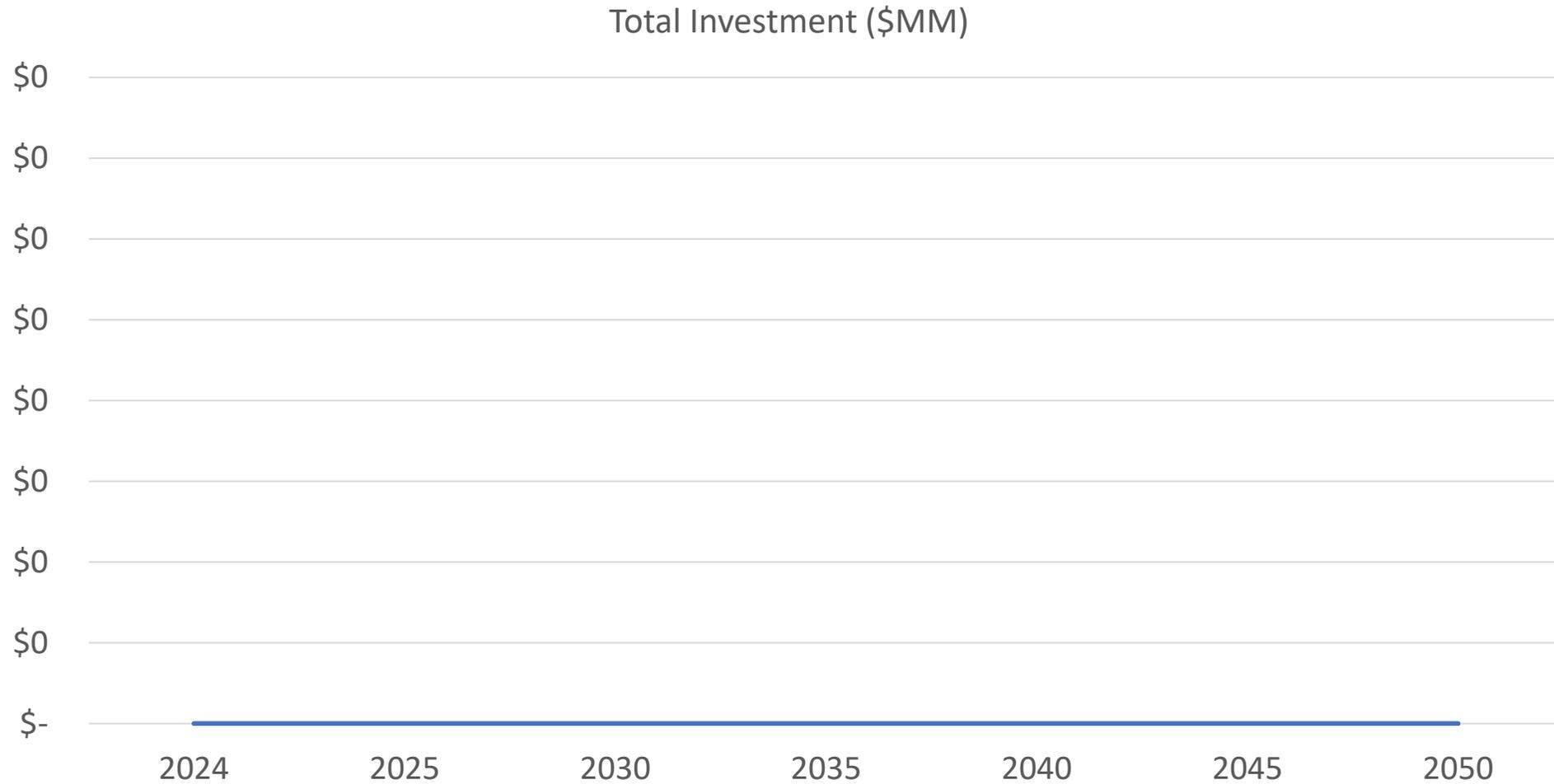


The EER model did not build petroleum or coal generation in Oregon. Other fossil generation employment shows support services for existing coal generation in neighboring states. These support services are assumed to decline with retirements throughout the study years, though there is uncertainty.

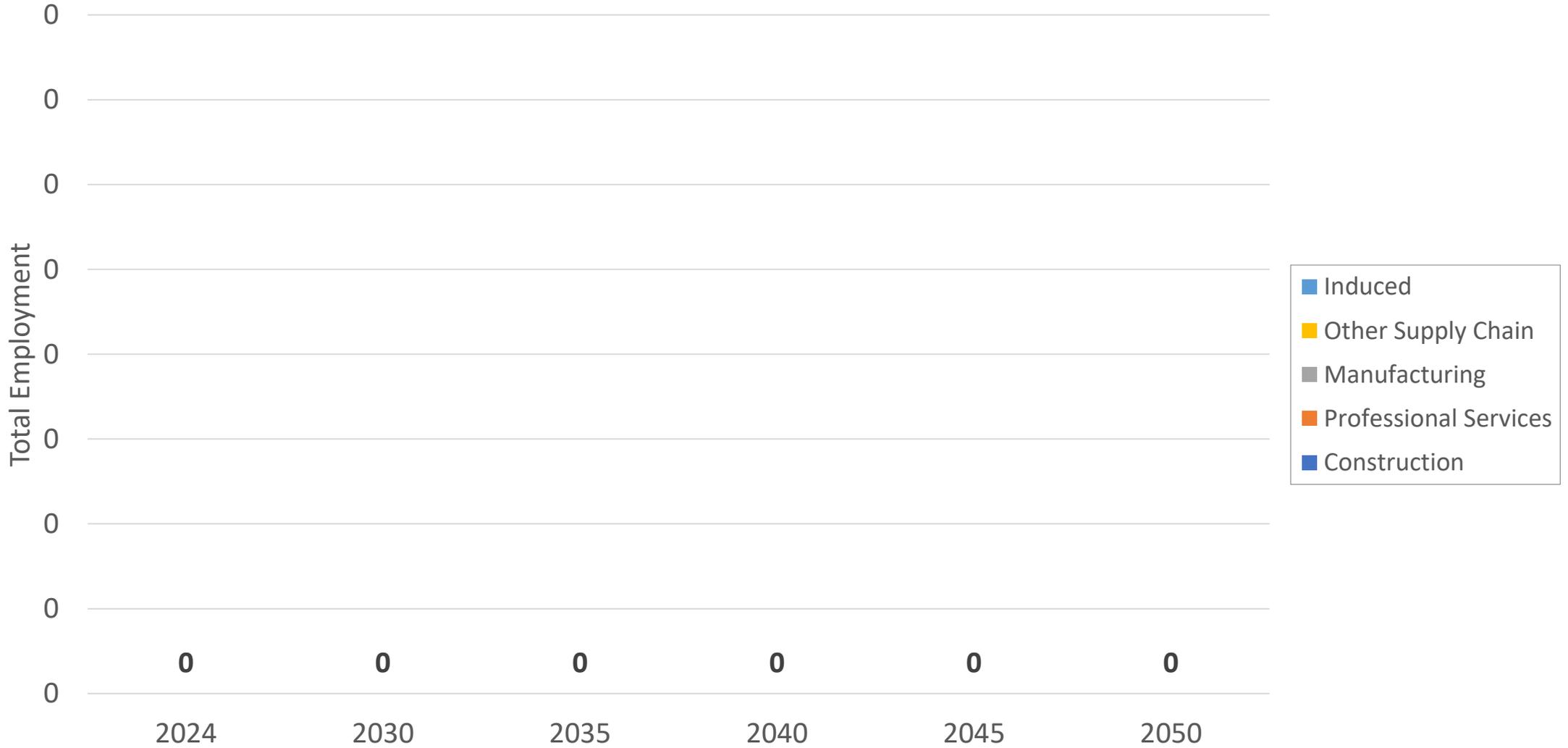
REFERENCE SCENARIO OUTPUTS, OTHER FOSSIL GENERATION, WEST OREGON



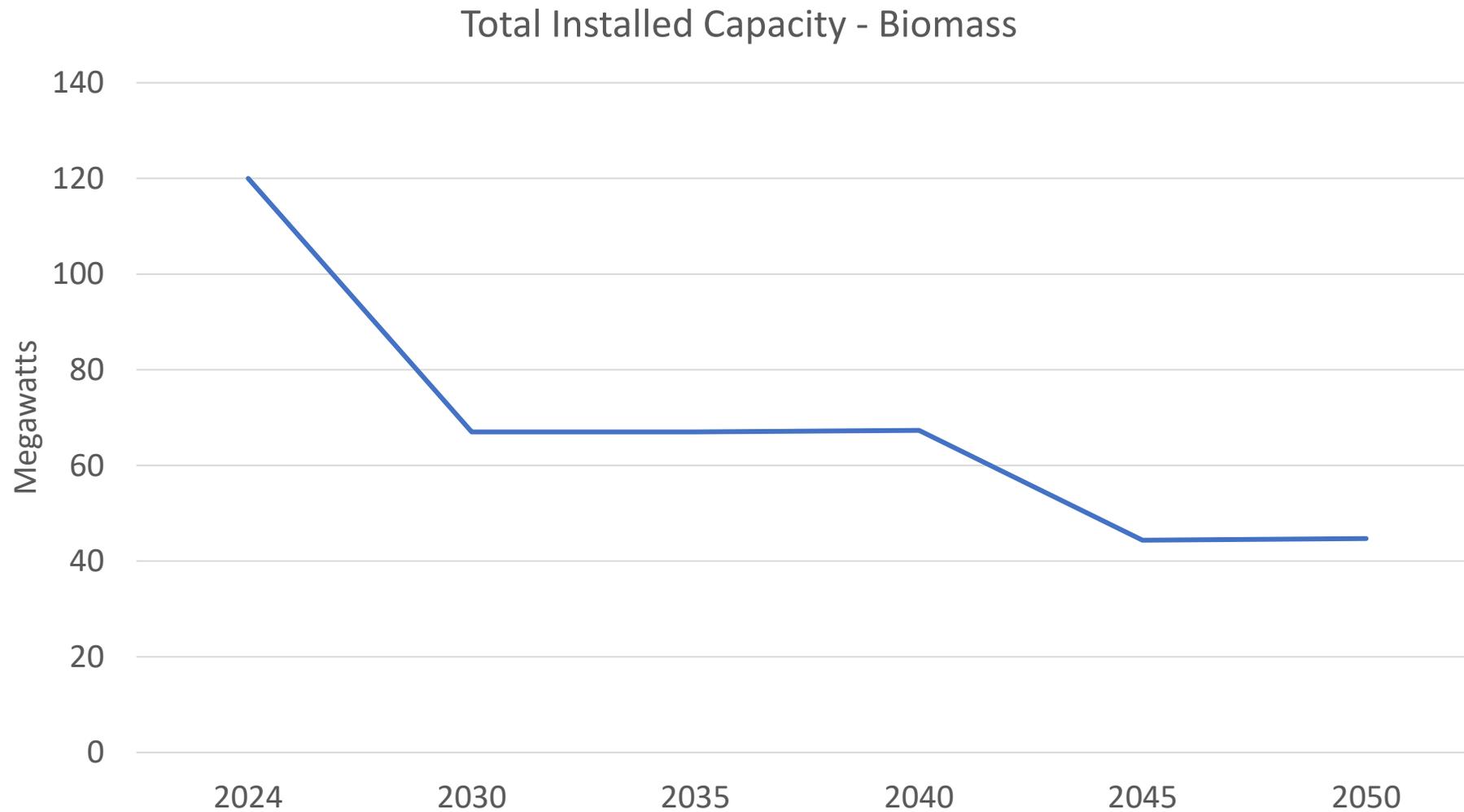
REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - GEOTHERMAL, WEST OREGON



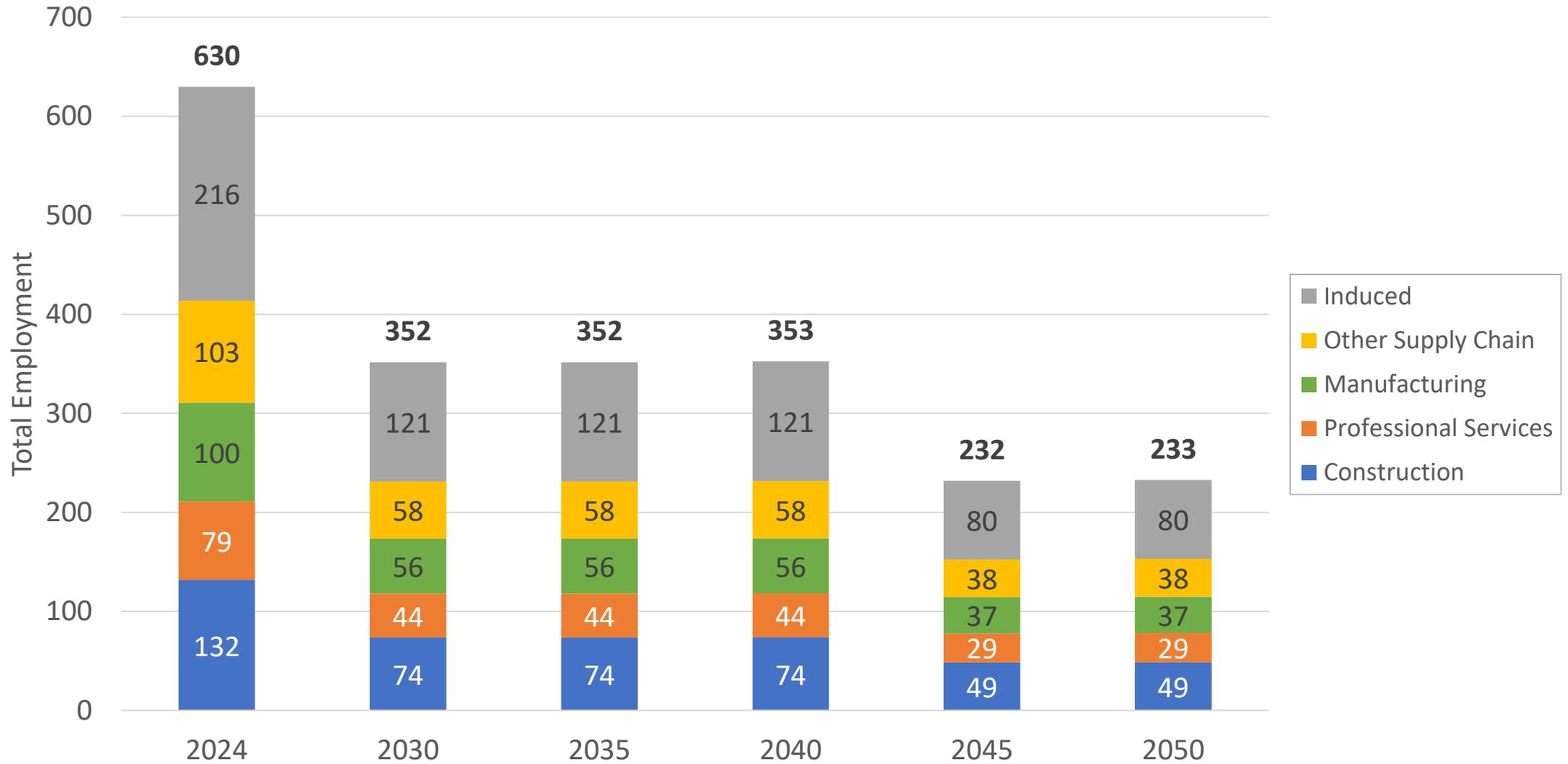
REFERENCE SCENARIO OUTPUTS, OTHER RENEWABLE GENERATION - GEOTHERMAL, WEST OREGON



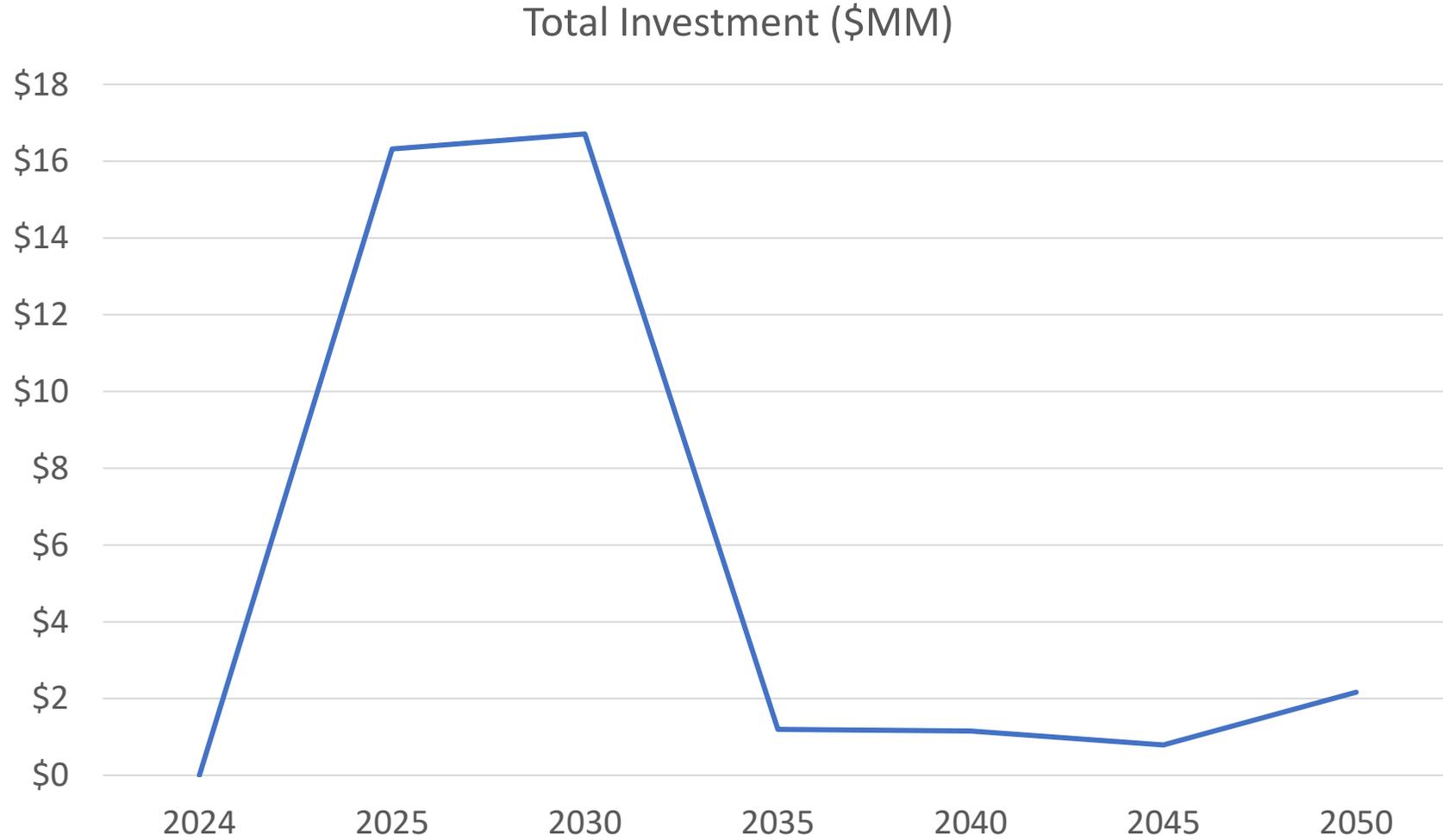
REFERENCE SCENARIO INPUTS, OTHER RENEWABLE GENERATION - BIOMASS, WEST OREGON



REFERENCE SCENARIO **OUTPUTS, OTHER RENEWABLE GENERATION – BIOMASS, WEST OREGON**

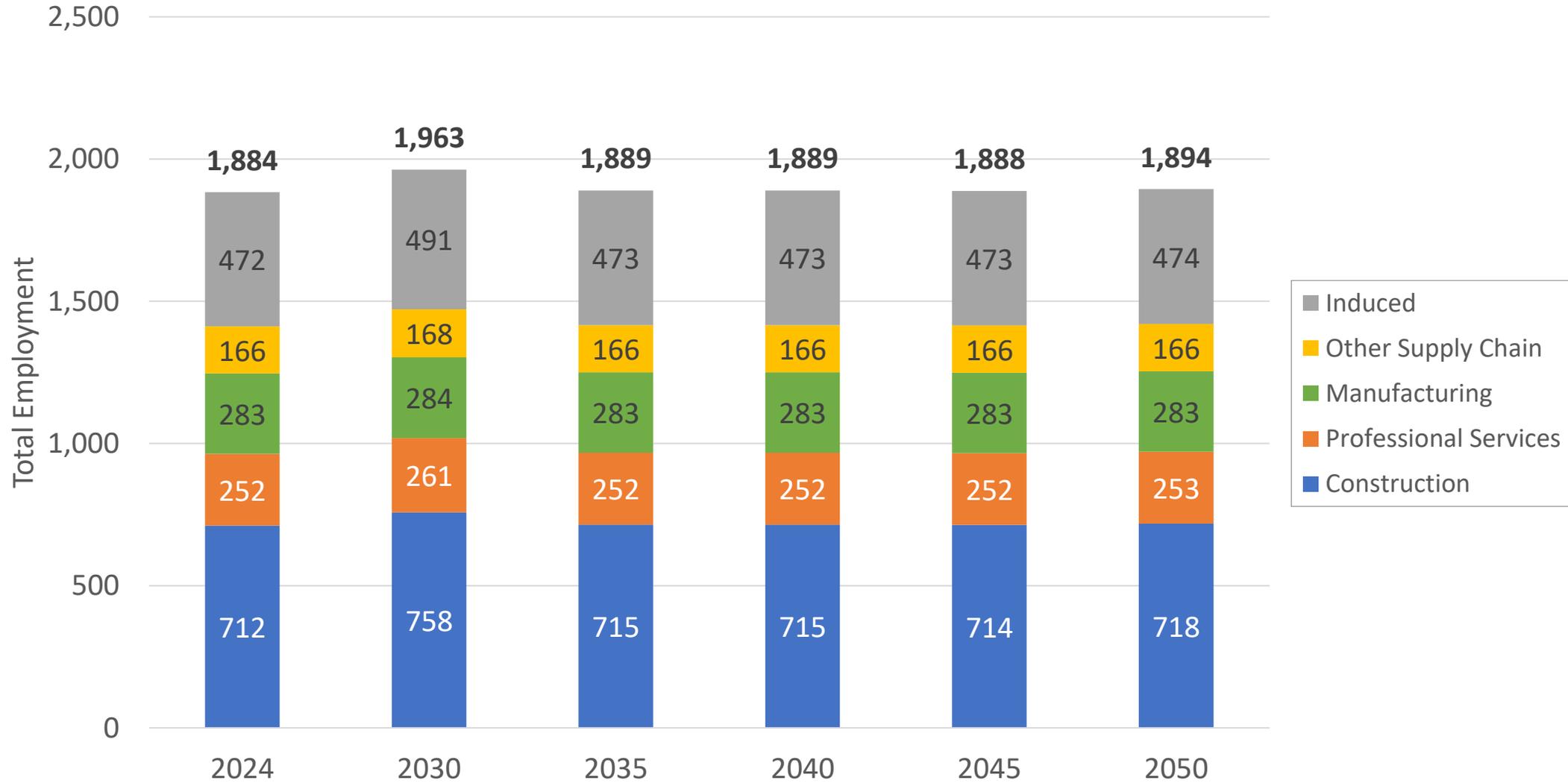


REFERENCE SCENARIO **INPUTS, STORAGE**, WEST OREGON



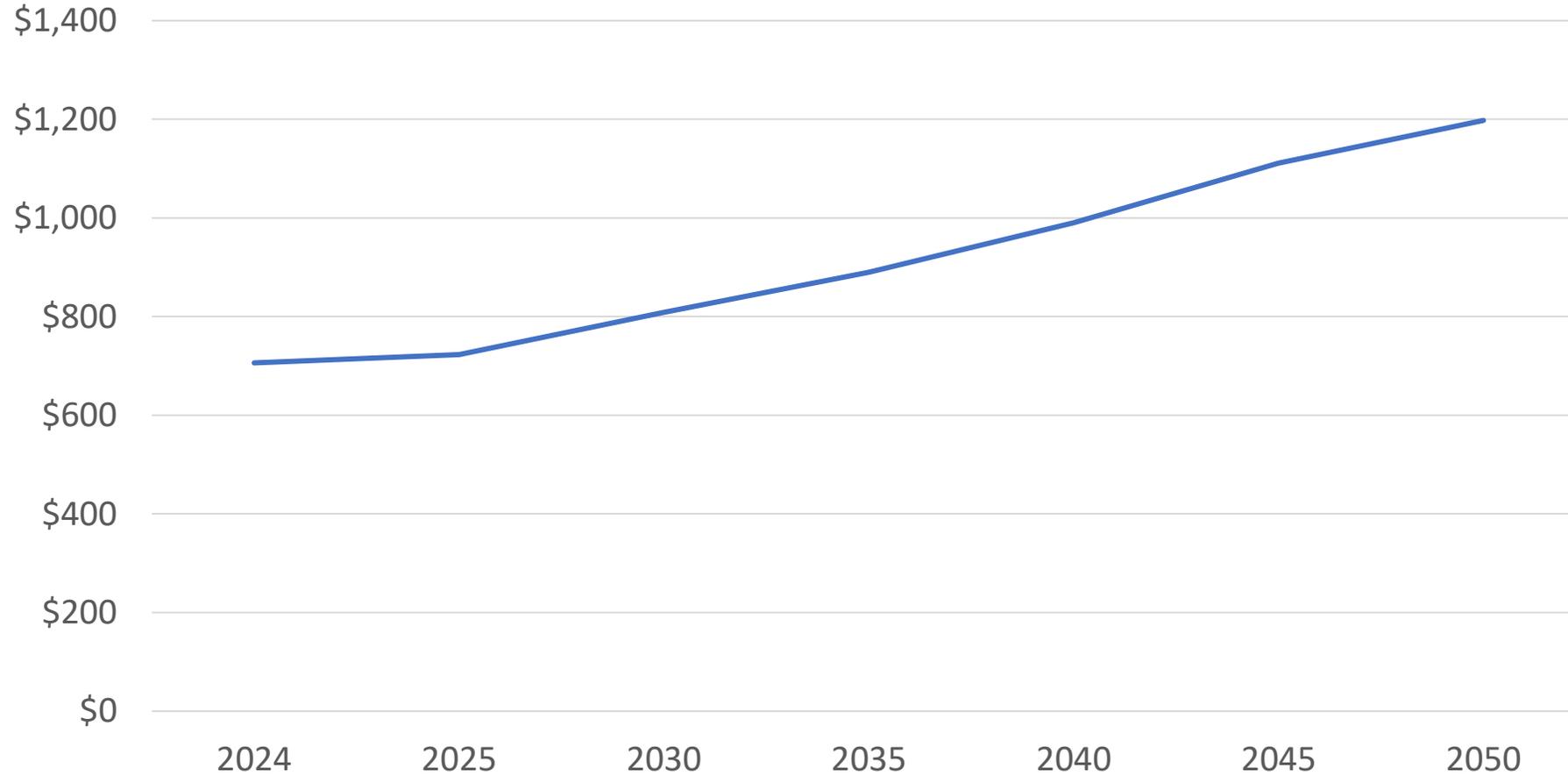
The investment for Storage found by the EER model is incremental to existing Storage capacity. The baseline for 2024 is shown as \$0.

REFERENCE SCENARIO **OUTPUTS, STORAGE**, WEST OREGON



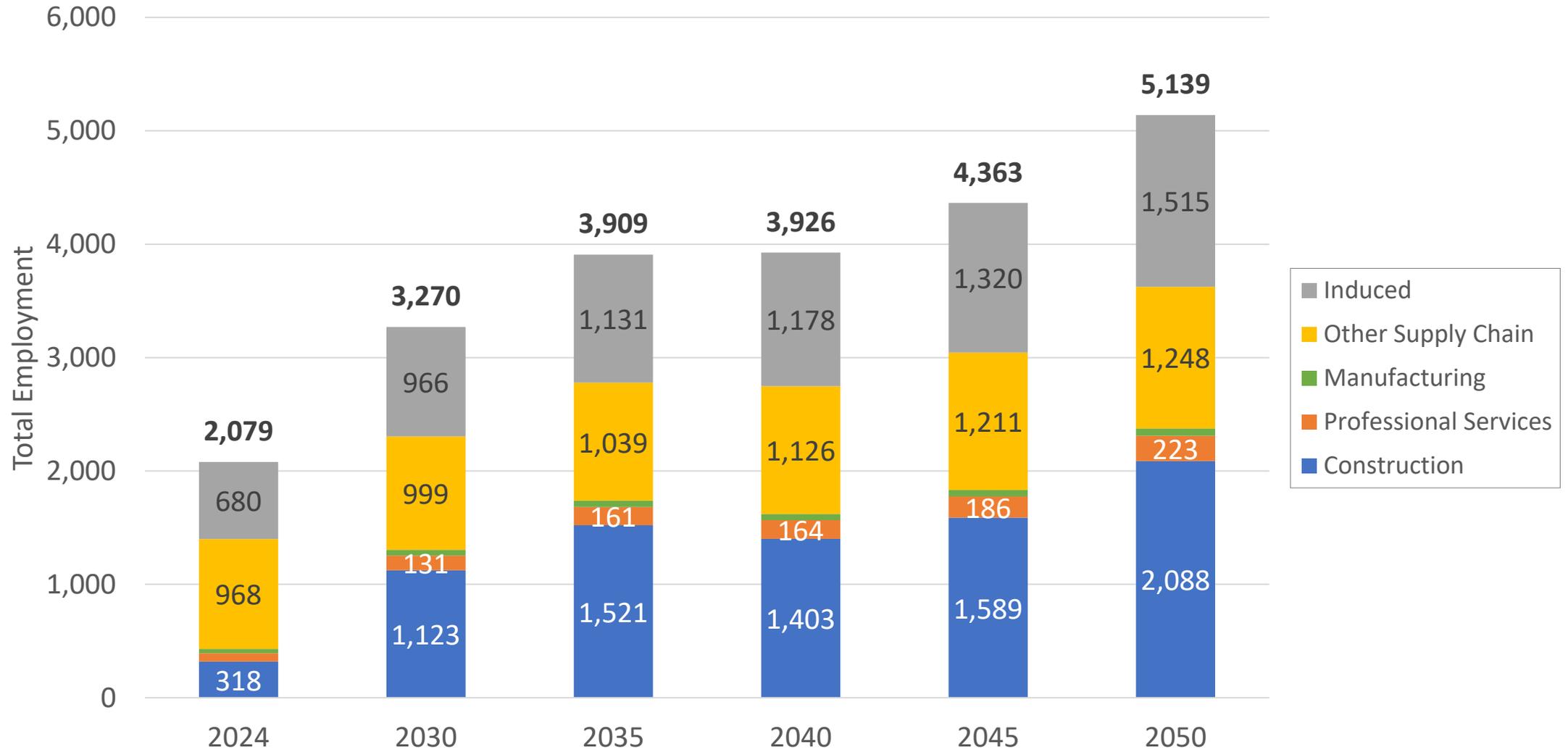
REFERENCE SCENARIO INPUTS, TRANSMISSION, WEST OREGON

Total Investment (\$MM)



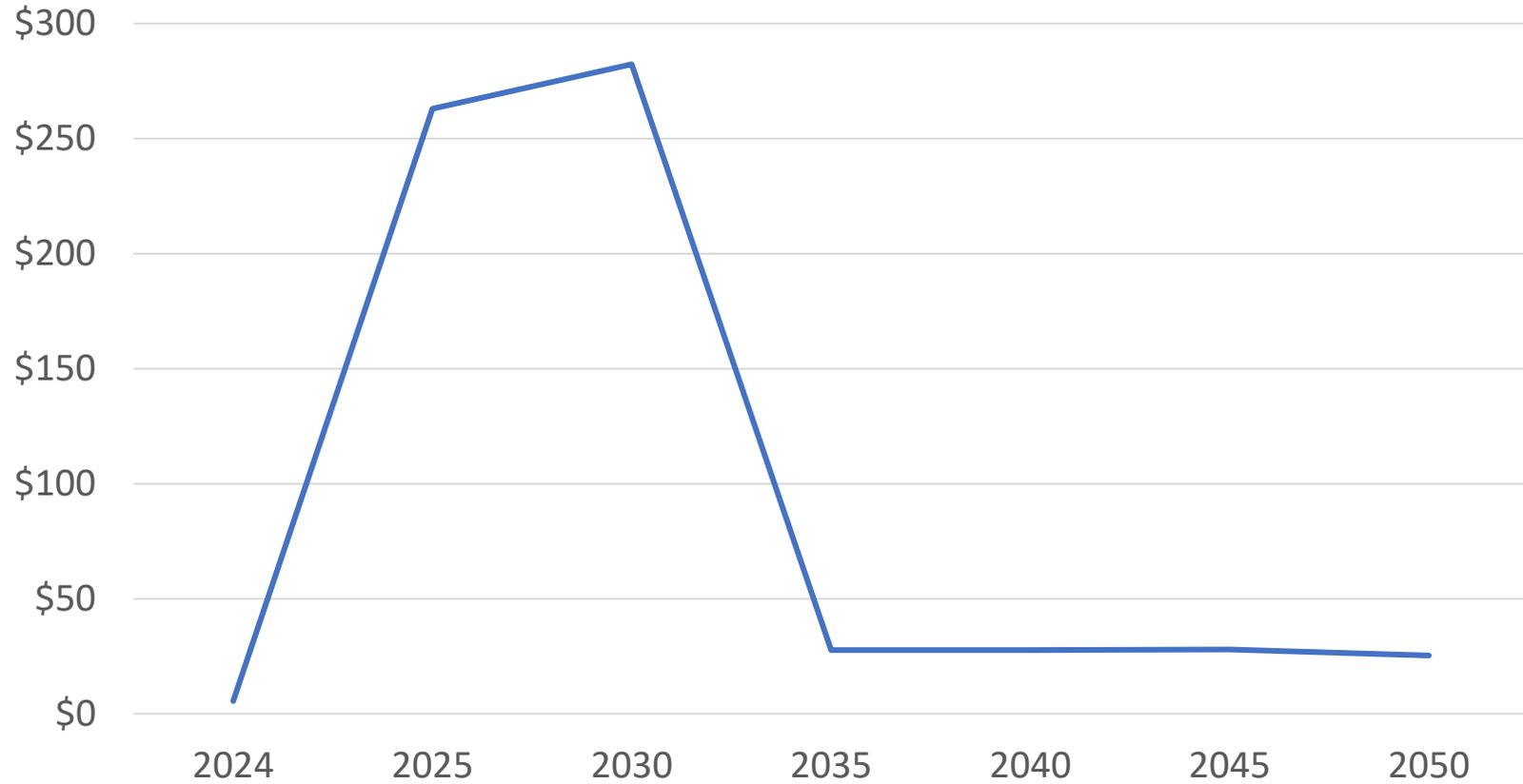
Investments include both [intra- and inter-zonal transmission](#) in West Oregon.

REFERENCE SCENARIO OUTPUTS, TRANSMISSION, WEST OREGON



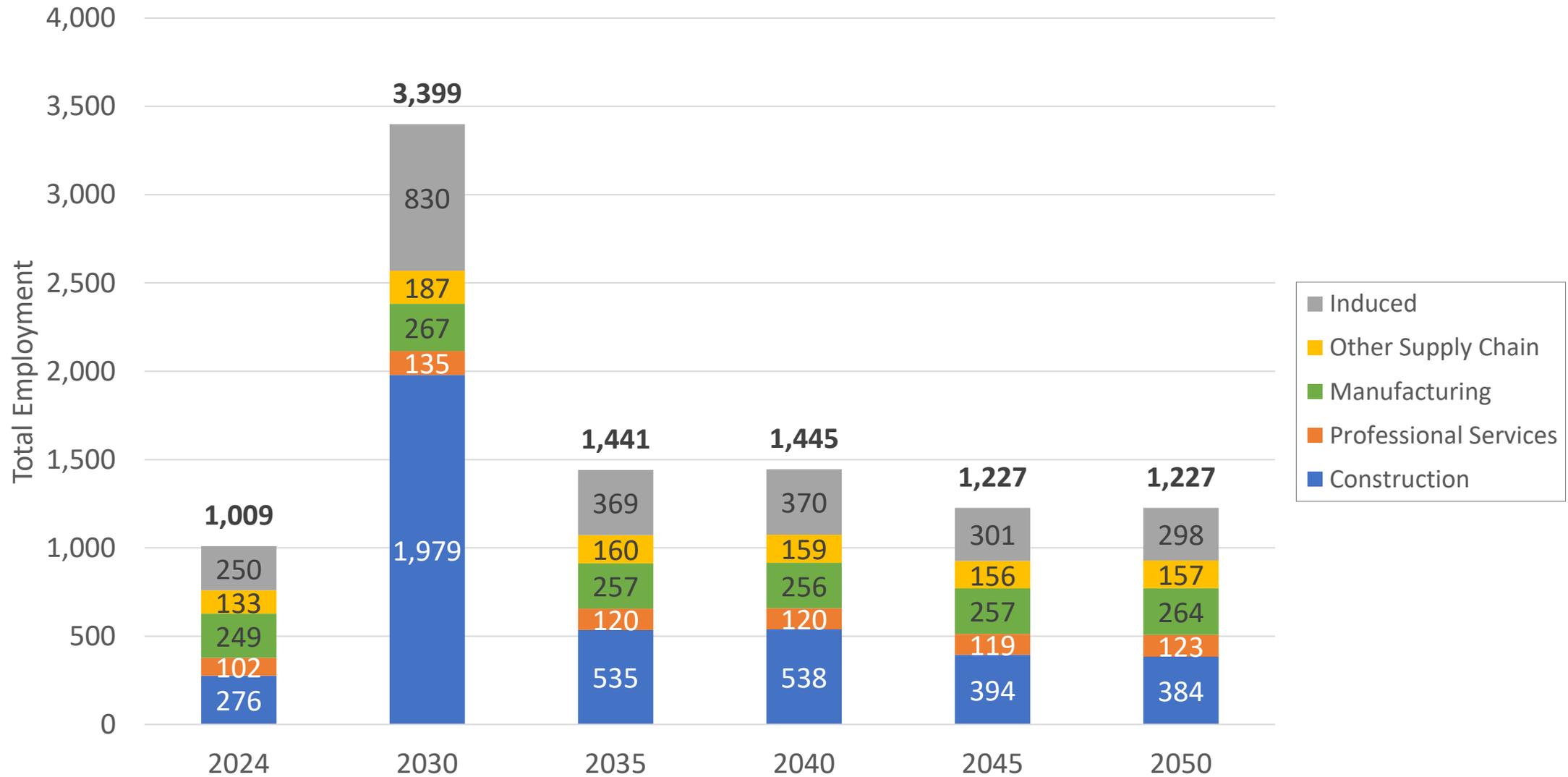
REFERENCE SCENARIO INPUTS, UTILITY SOLAR, WEST OREGON

Total Investment (\$MM)



Utility-scale solar investments support progress toward 2030 clean energy targets, but investment declines over time.

REFERENCE SCENARIO OUTPUTS, UTILITY SOLAR, WEST OREGON



**Part 3:
Initial
Employment
Outputs**

Fuels

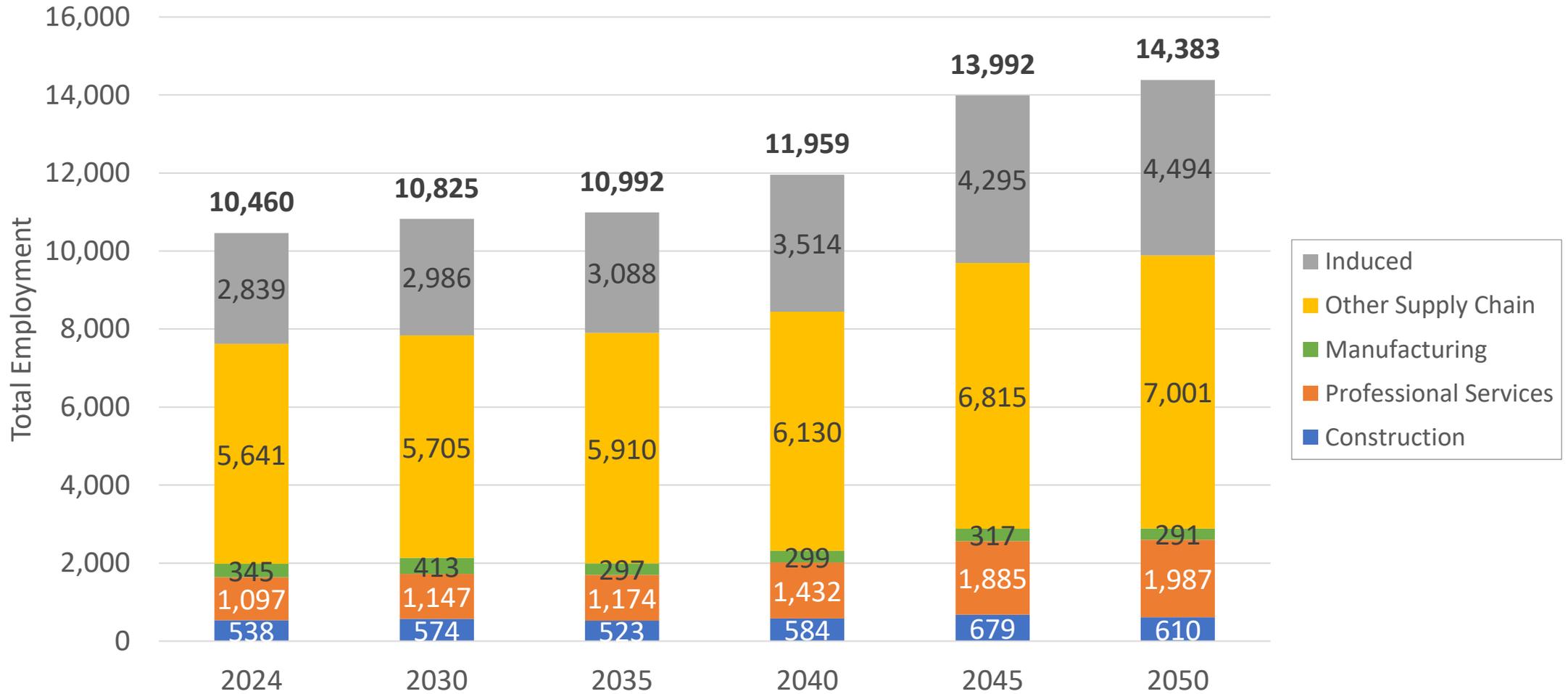
II. Fuels

- 1. Hydrogen**
- 2. Biofuels**
- 3. Natural Gas Production, Trade, and Support Services**
- 4. Natural Gas Distribution**
- 5. Other Fossil Fuels**

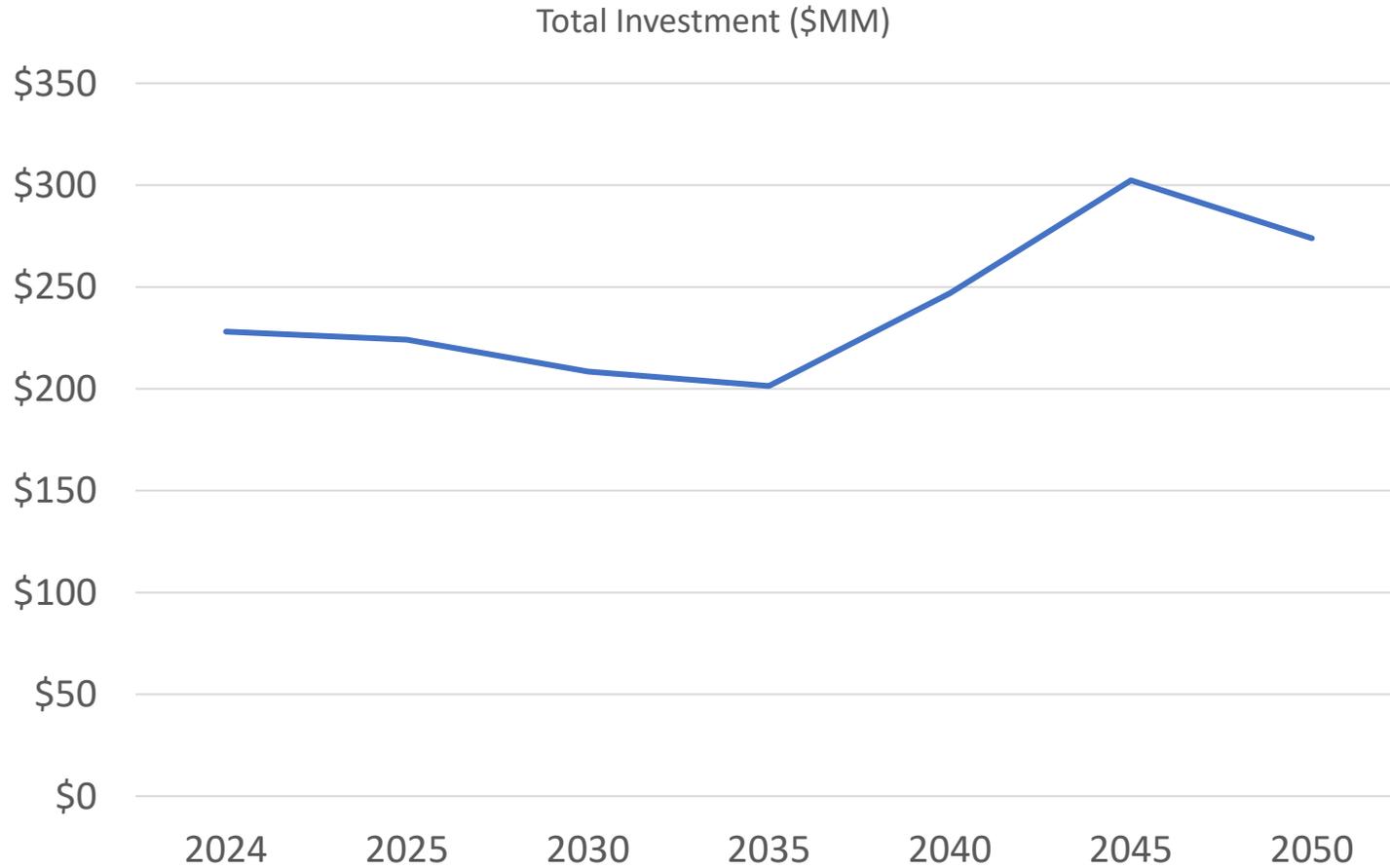
FUELS: REFERENCE, OREGON

SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Hydrogen	0	686	1,375	2,541	4,589	5,419
Sub-total	0	686	1,375	2,541	4,589	5,419
Change		686	1,375	2,541	4,589	5,419
Displacement Sub-Sectors						
Biofuels	6,184	6,079	6,040	6,359	6,762	6,540
Natural Gas Production, Trade, and Support Services	307	242	167	140	109	93
Natural Gas Distribution	3,197	3,094	2,904	2,630	2,379	2,242
Other Fossil Fuels	772	724	505	289	153	87
Sub-total	10,460	10,139	9,617	9,417	9,403	8,963
Change		-321	-843	-1,043	-1,058	-1,497
Fuels OVERALL	10,460	10,825	10,992	11,959	13,992	14,383
Net Change from 2024		365	532	1,499	3,531	3,922

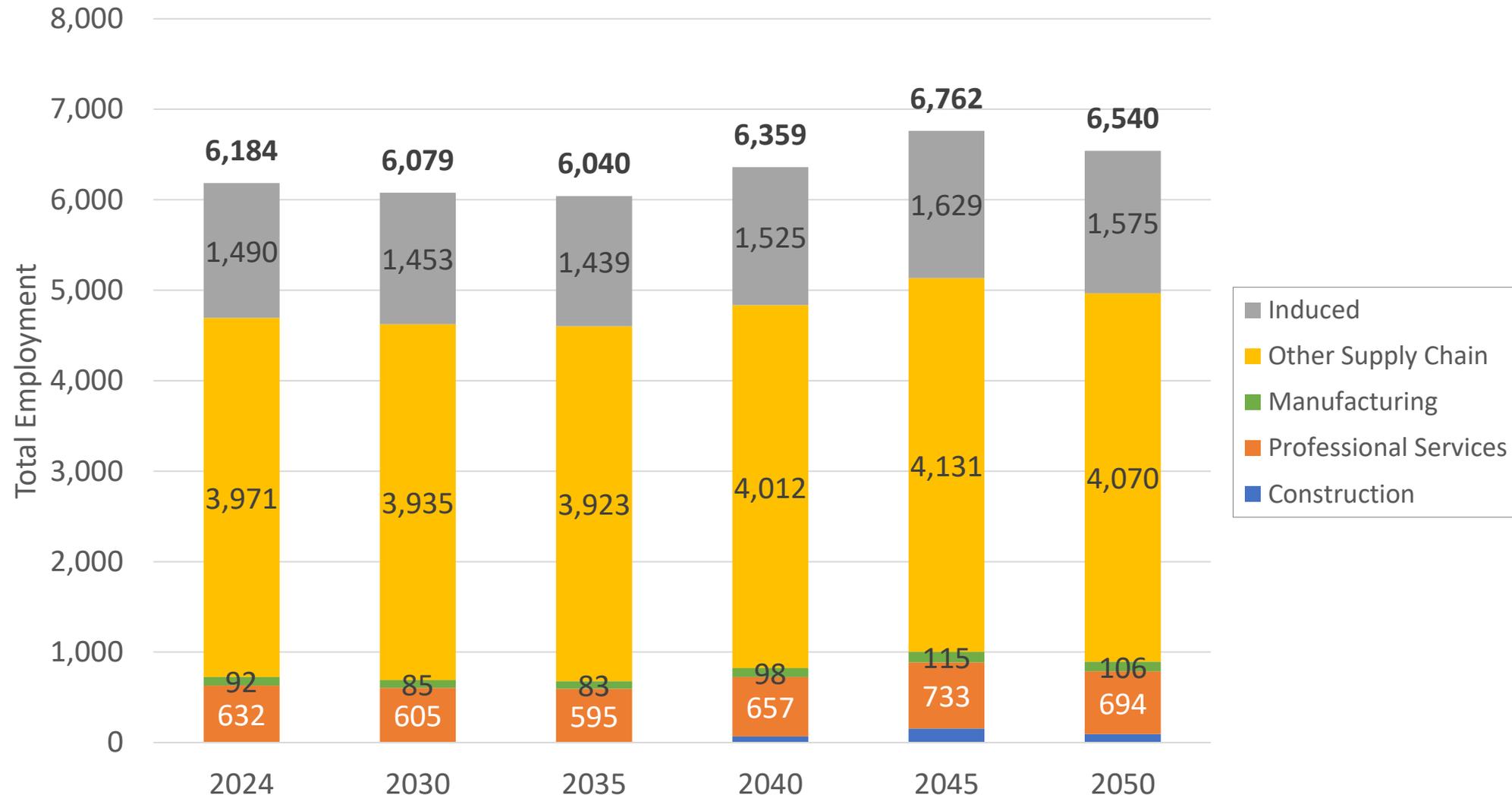
REFERENCE SCENARIO: **FUELS – TOTALS, OREGON**



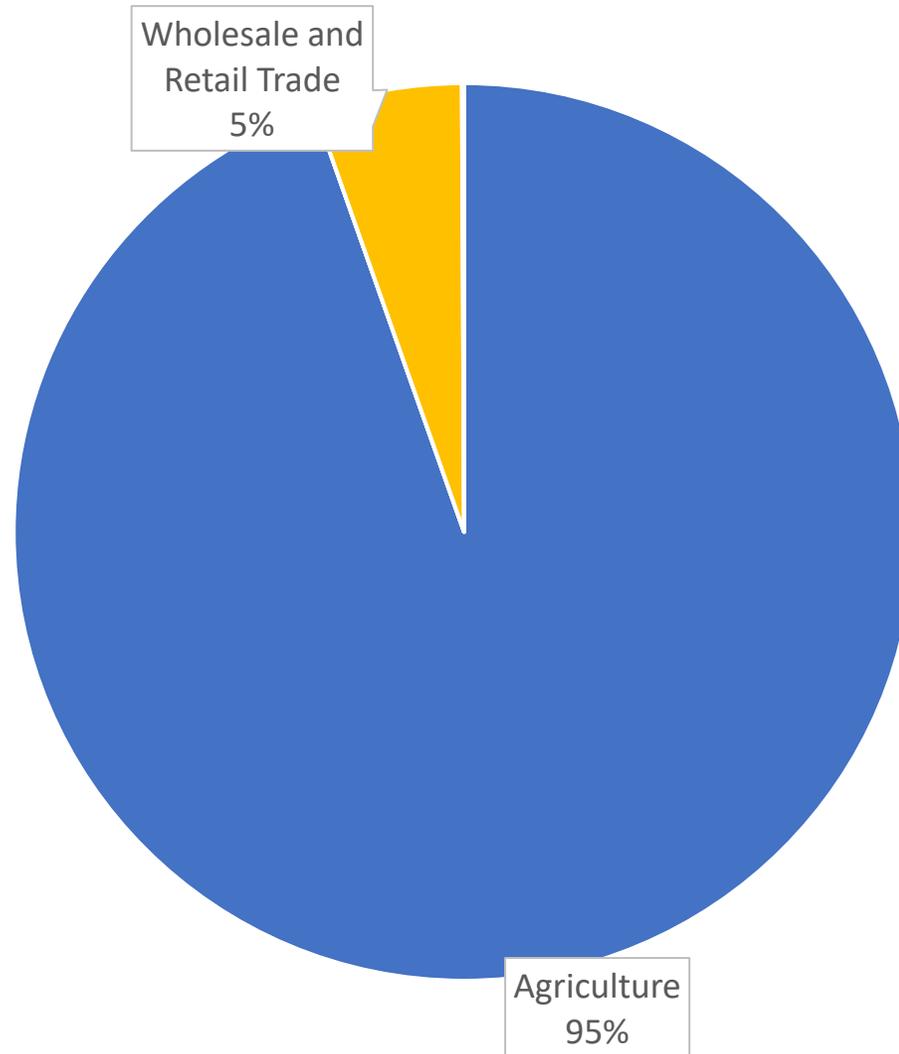
REFERENCE SCENARIO INPUTS: BIOFUELS, OREGON



Investments in biofuel production and distribution decline due to ongoing electrification of buildings and the vehicle fleet, then recover in later years.

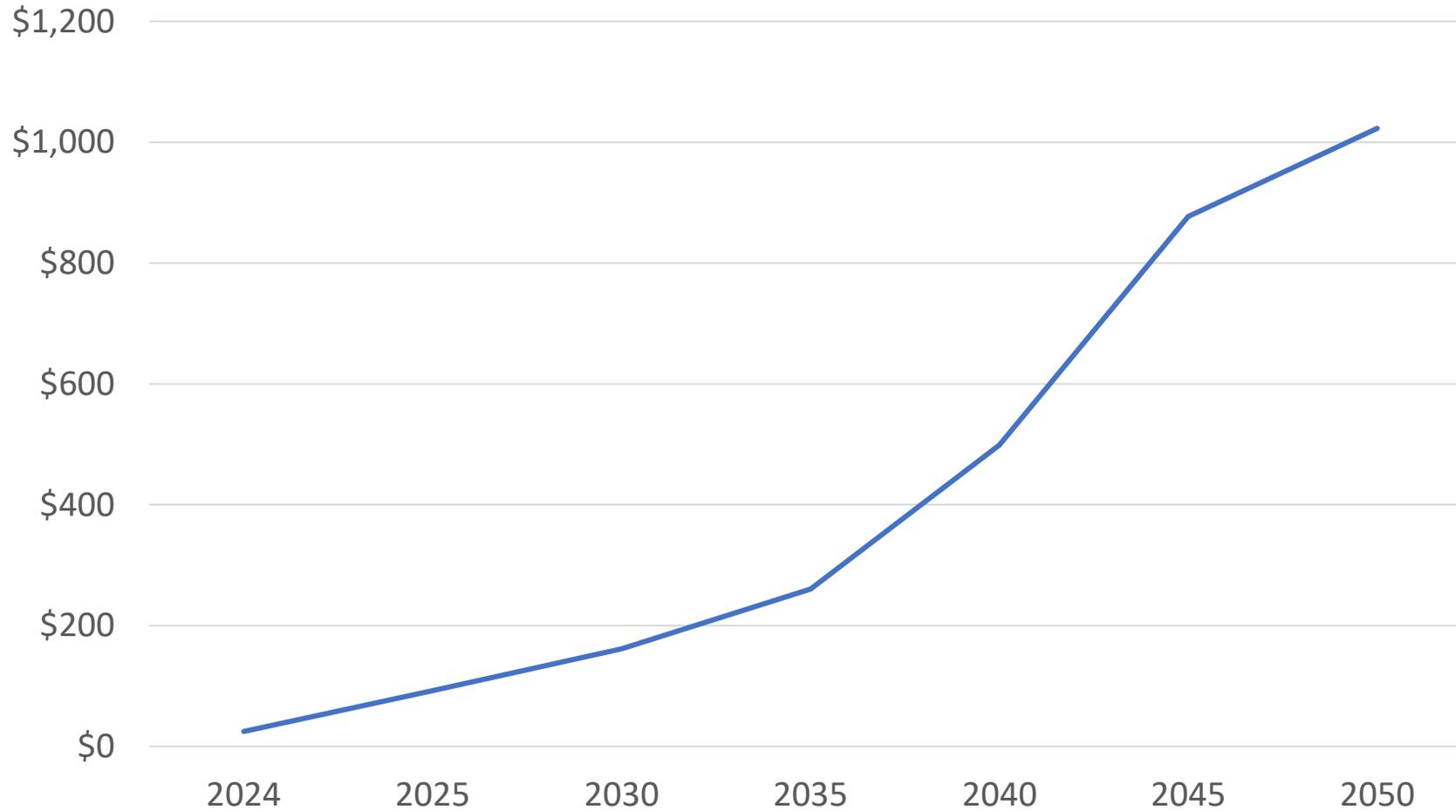
REFERENCE SCENARIO **OUTPUTS: BIOFUELS, OREGON**

OTHER SUPPLY CHAIN BREAKOUT, **BIOFUELS**, OREGON

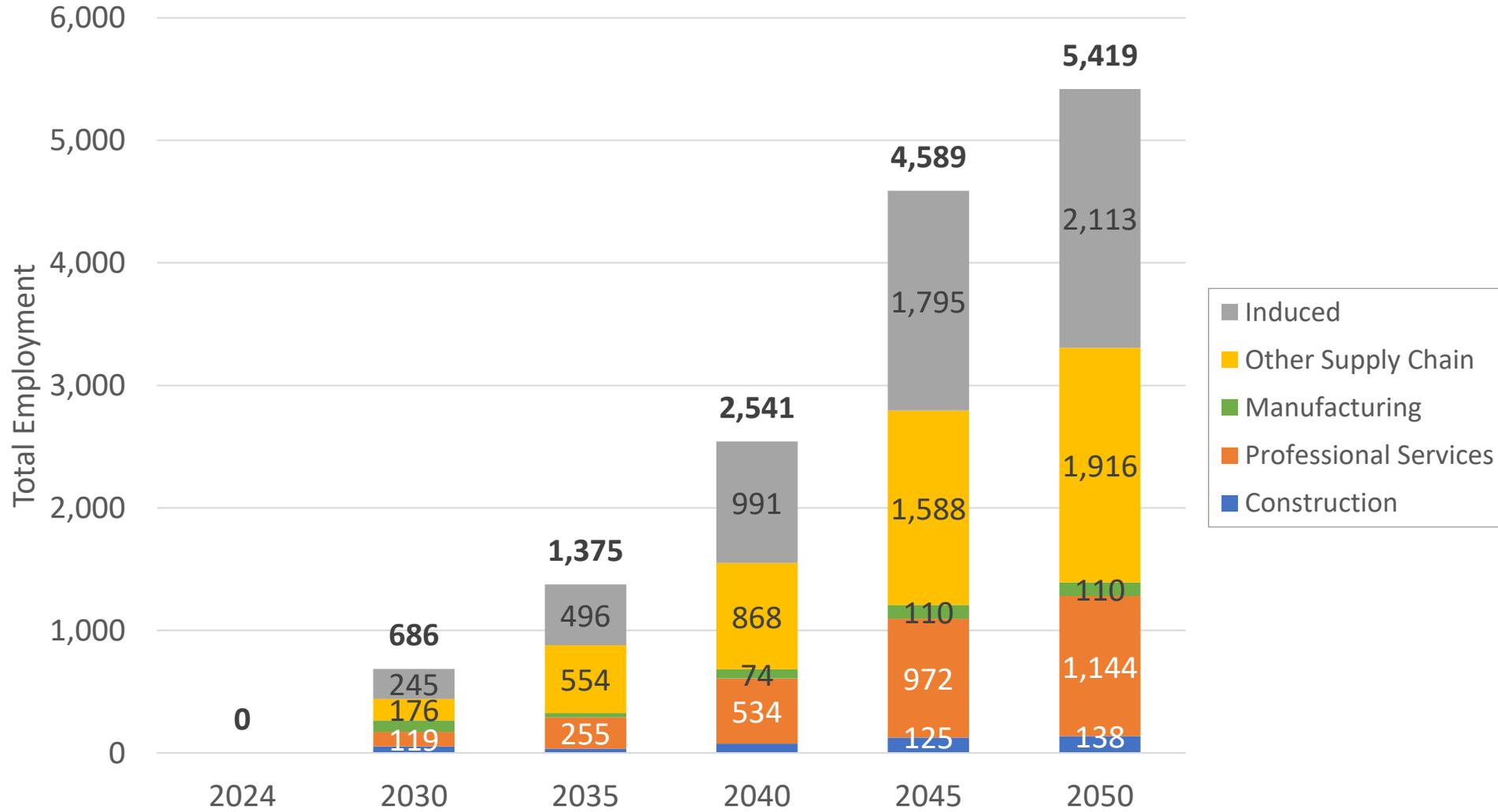


REFERENCE SCENARIO **INPUTS: HYDROGEN**, OREGON

Total Investment (\$MM)

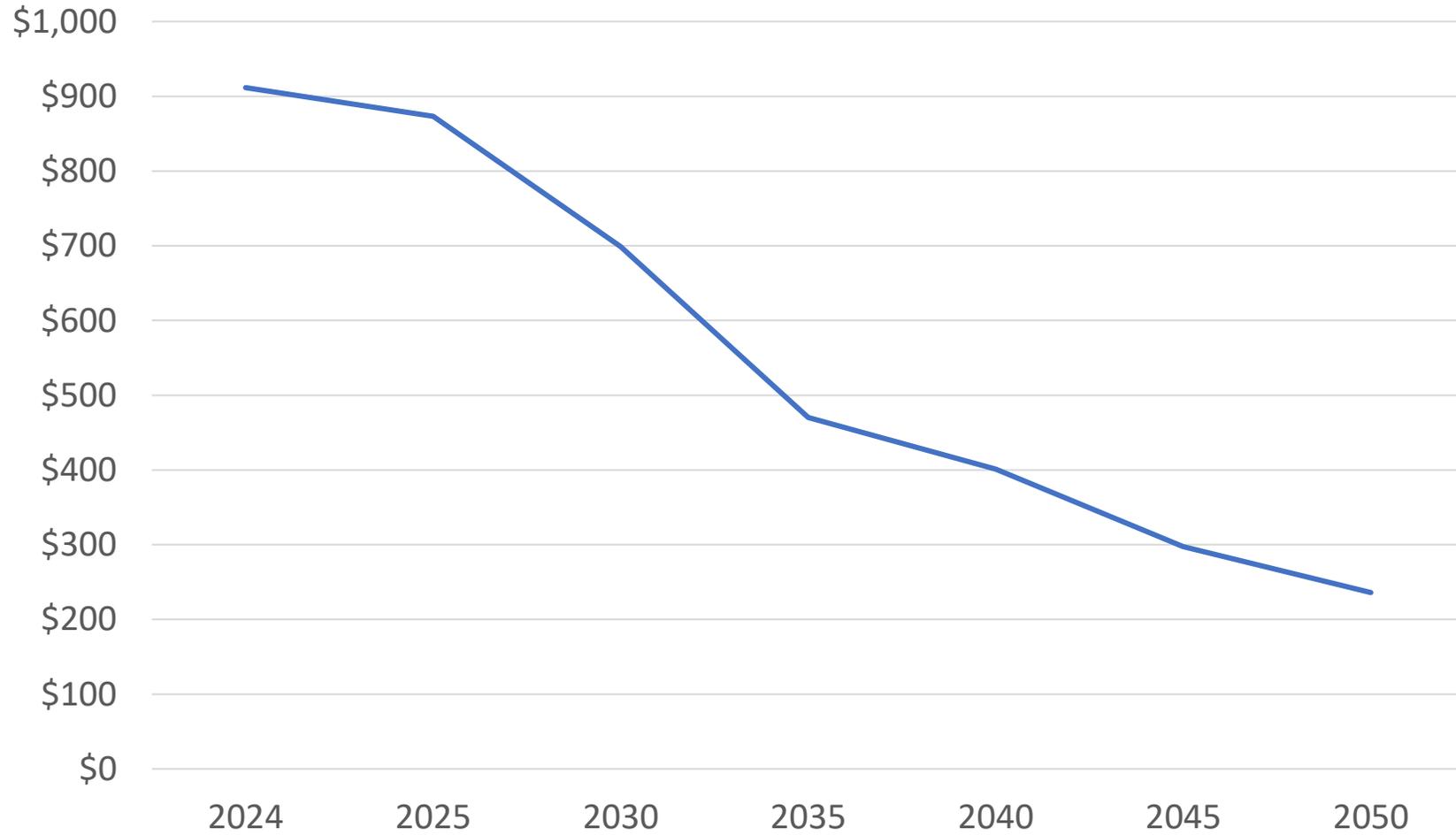


REFERENCE SCENARIO OUTPUTS: HYDROGEN, OREGON

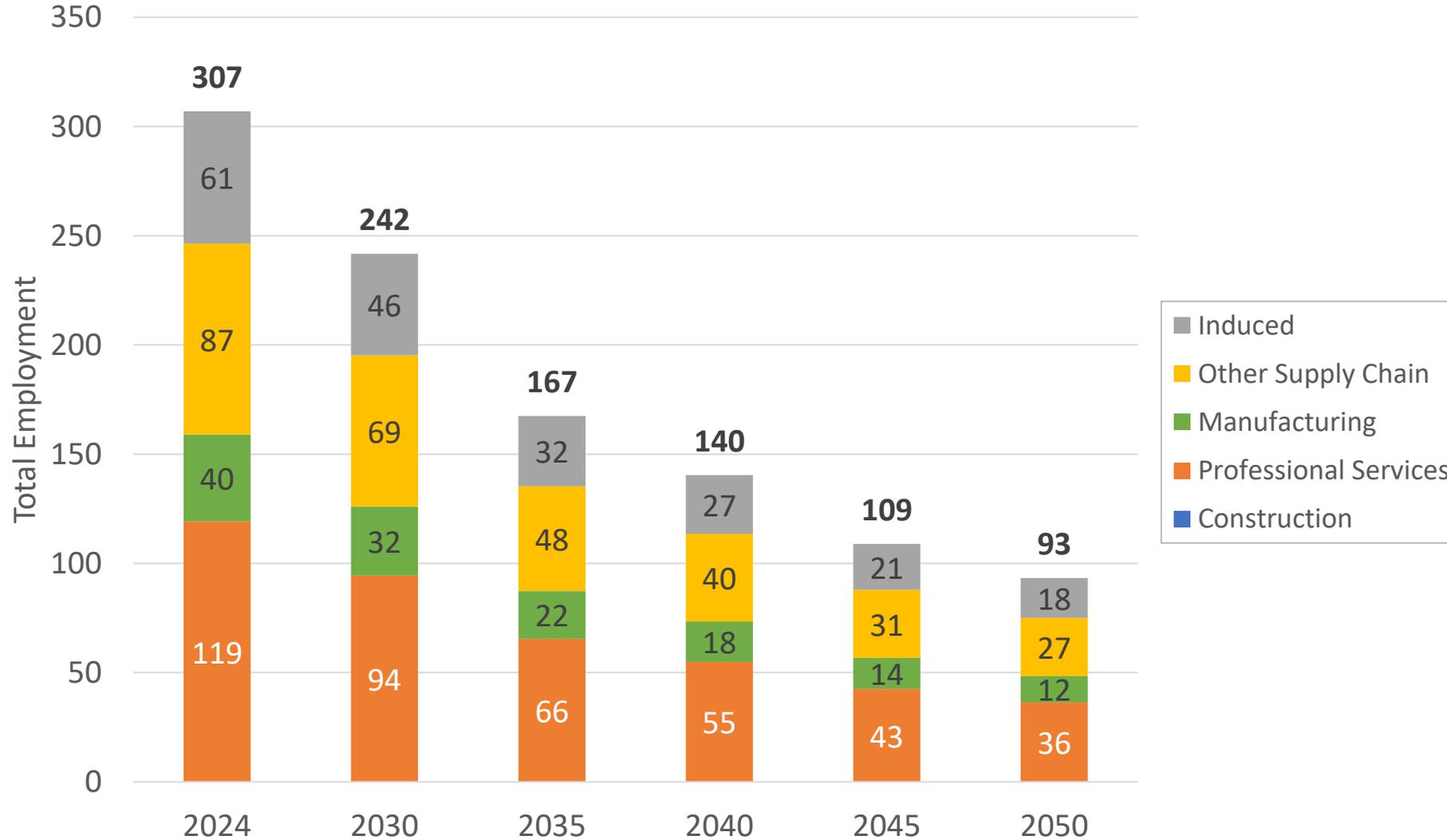


**REFERENCE SCENARIO INPUTS: NATURAL GAS PRODUCTION,
TRADE, AND SUPPORT SERVICES, OREGON**

Total Investment (\$MM)

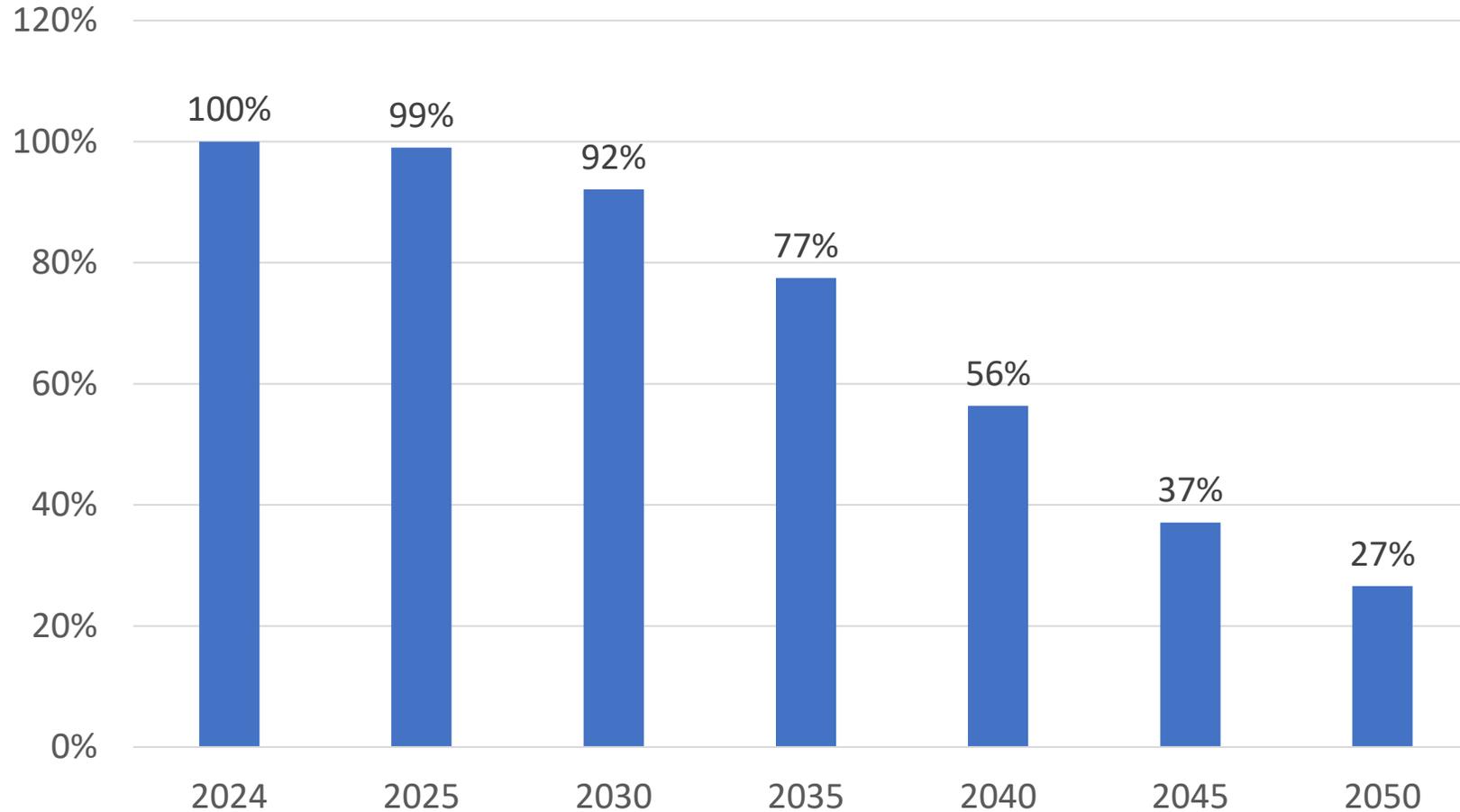


**REFERENCE SCENARIO OUTPUTS: NATURAL GAS
PRODUCTION, TRADE, AND SUPPORT SERVICES, OREGON**



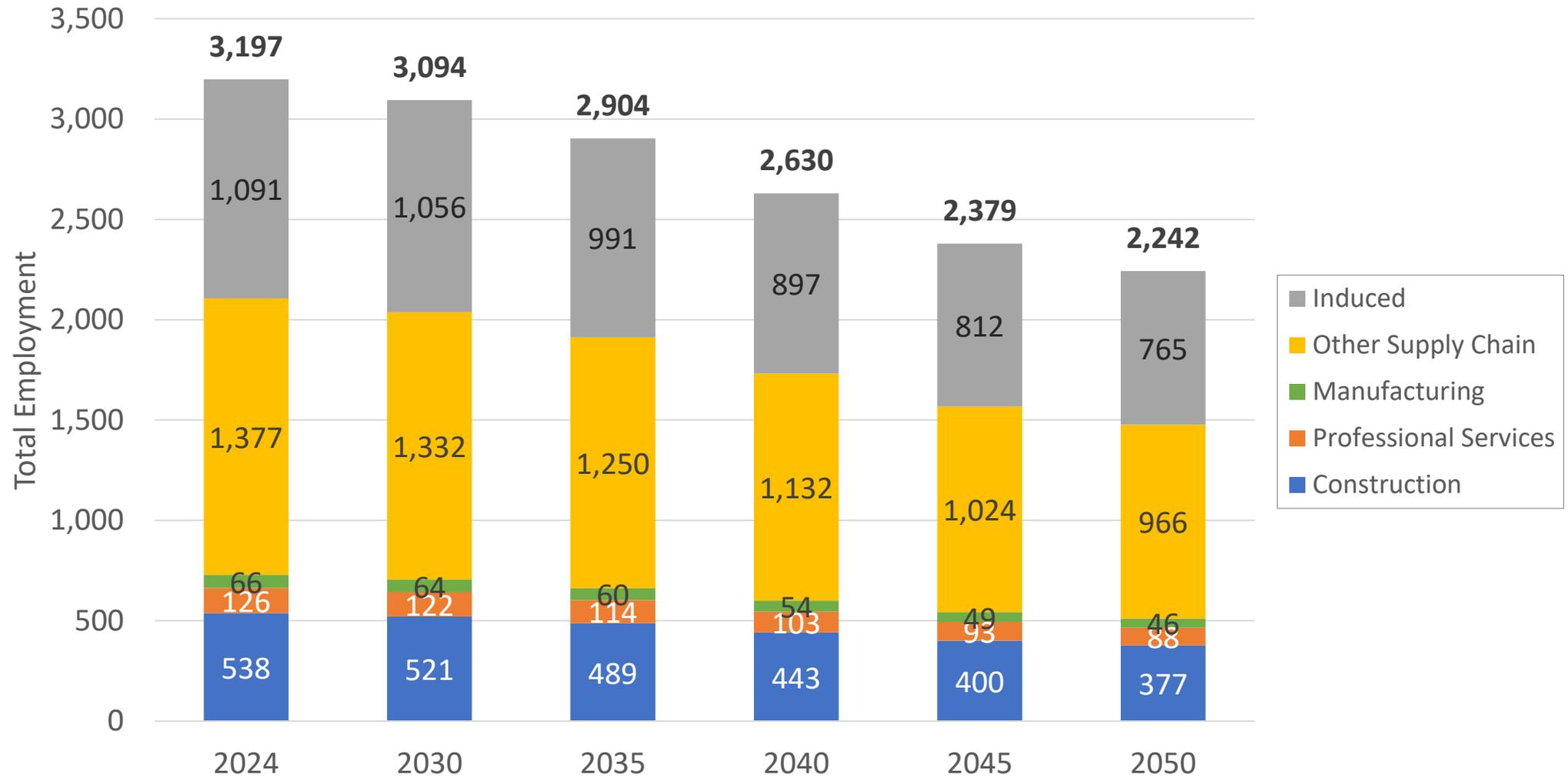
REFERENCE SCENARIO INPUTS: NATURAL GAS DISTRIBUTION, OREGON

Pipeline Gas Demand Relative to 2024

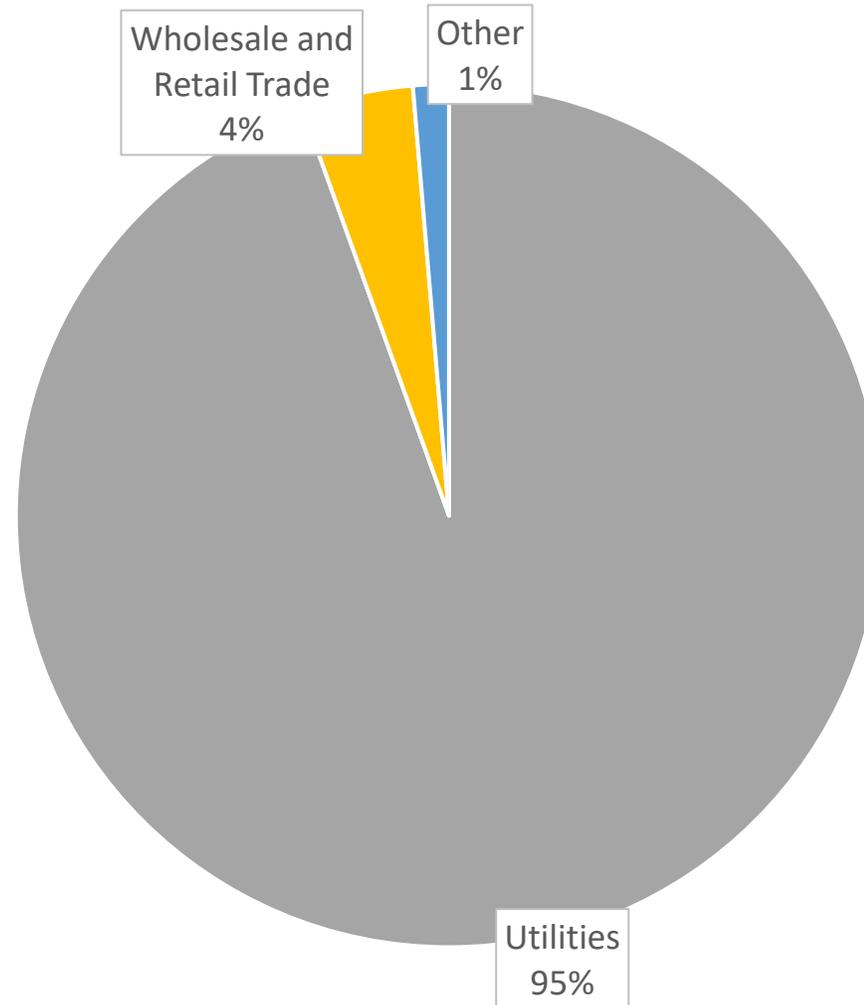


BWR uses pipeline gas demand derived from EER modeling to determine customer base, which serves as the input to the employment model.

REFERENCE SCENARIO OUTPUTS: NATURAL GAS DISTRIBUTION, OREGON

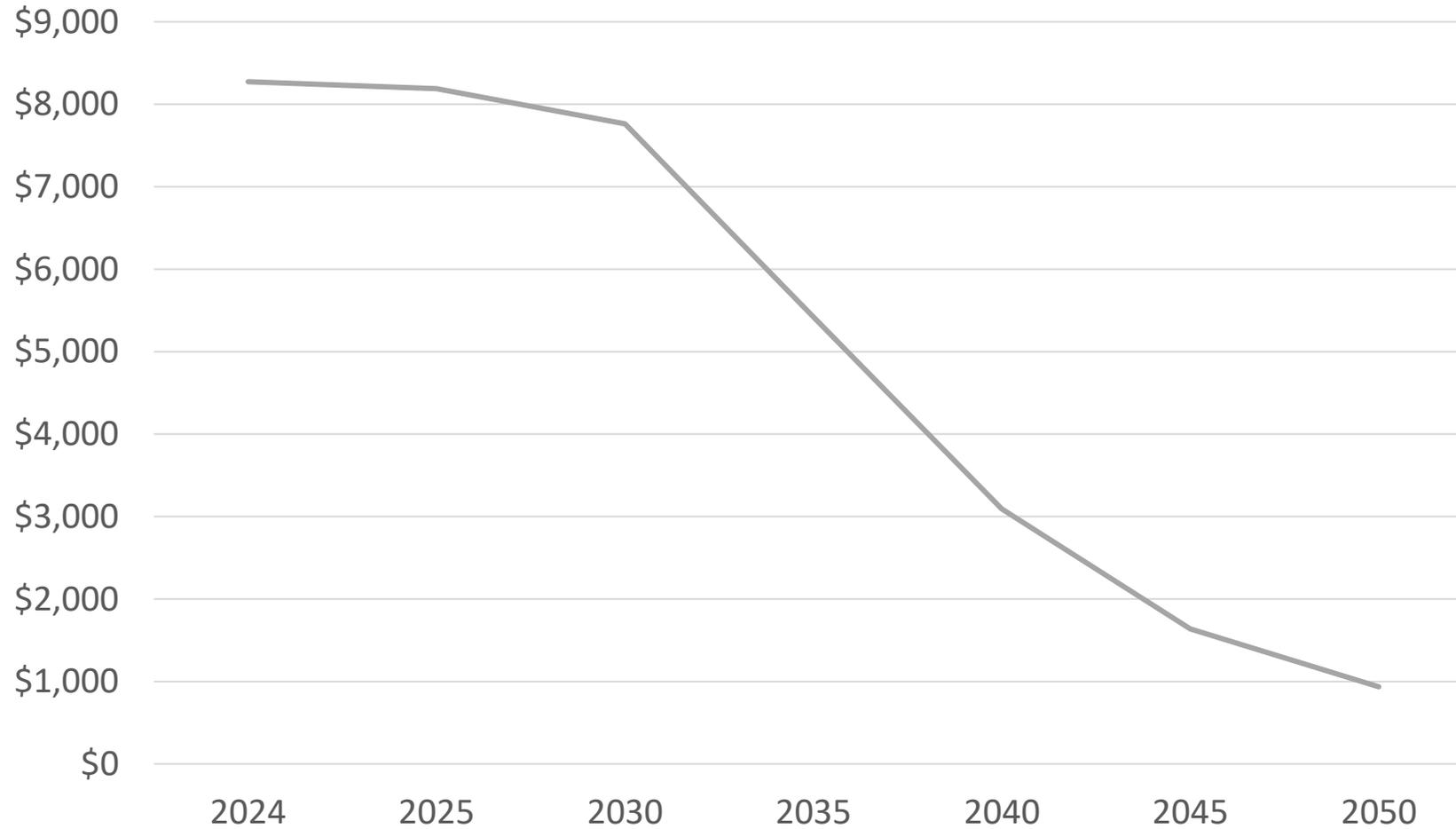


OTHER SUPPLY CHAIN BREAKOUT: NATURAL GAS DISTRIBUTION, OREGON

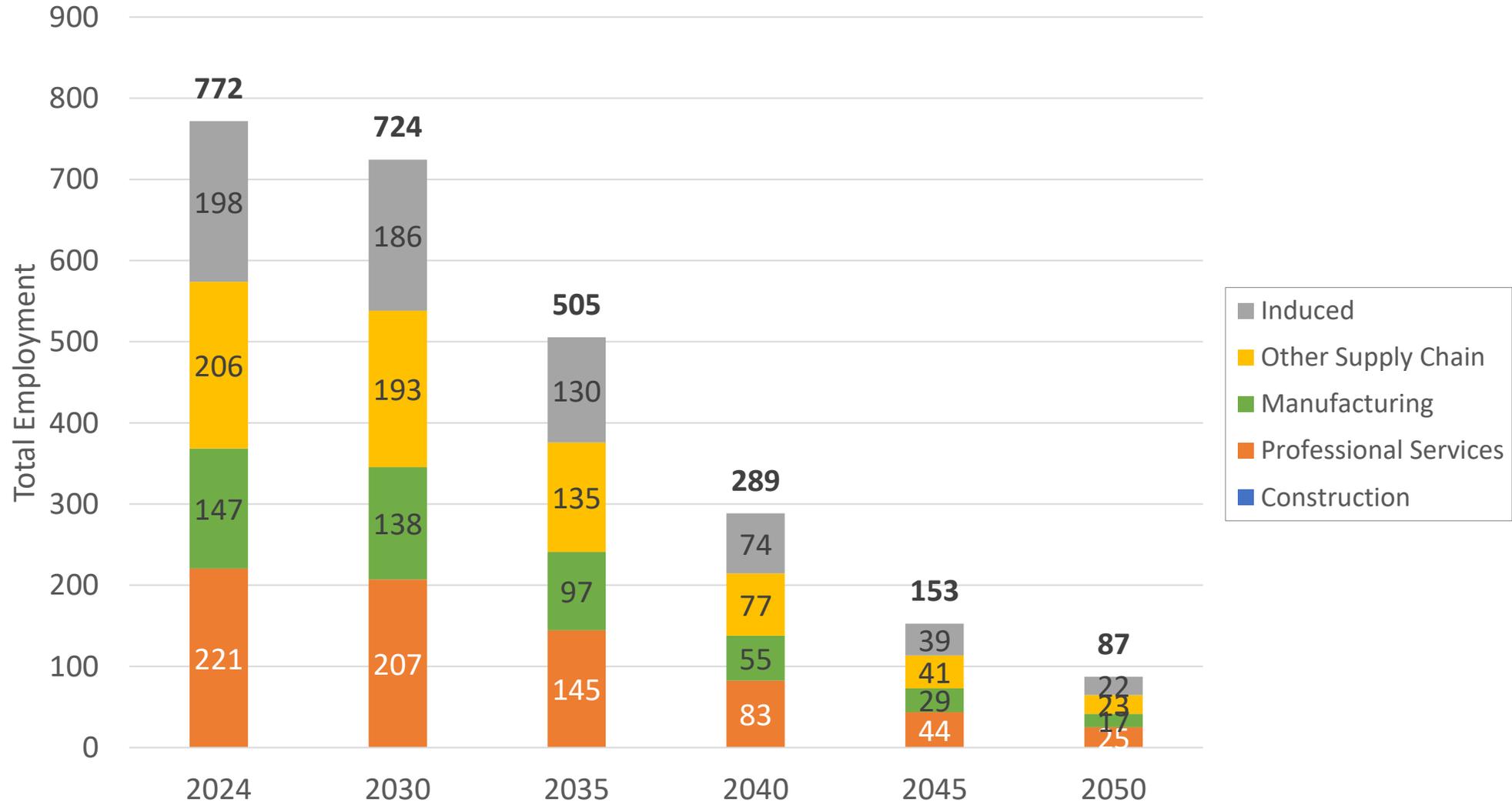


REFERENCE SCENARIO INPUTS: OTHER FOSSIL FUELS, OREGON

Total Investment (\$MM)



REFERENCE SCENARIO OUTPUTS: OTHER FOSSIL FUELS, OREGON

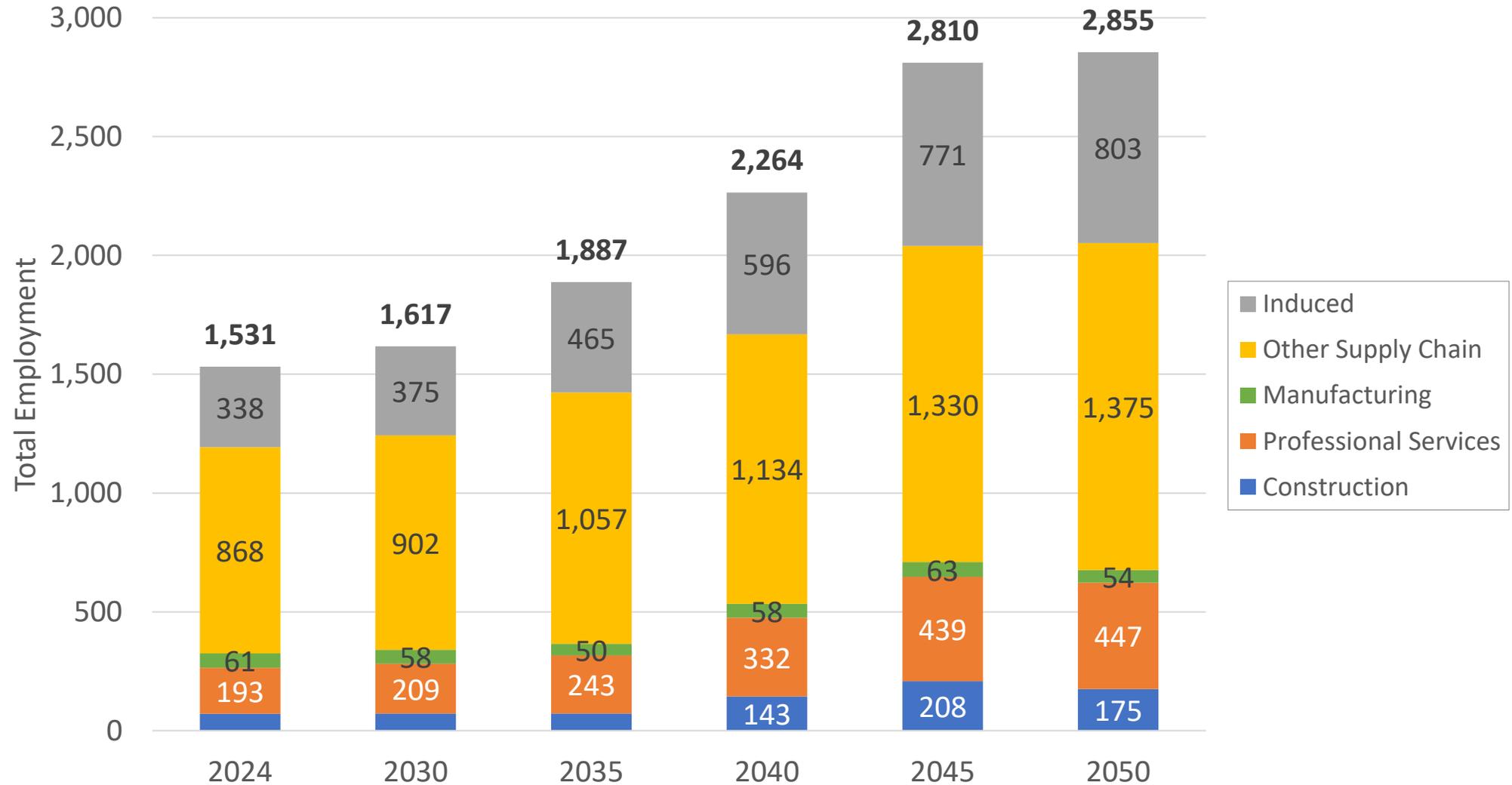


FUELS: REFERENCE, EAST OREGON*

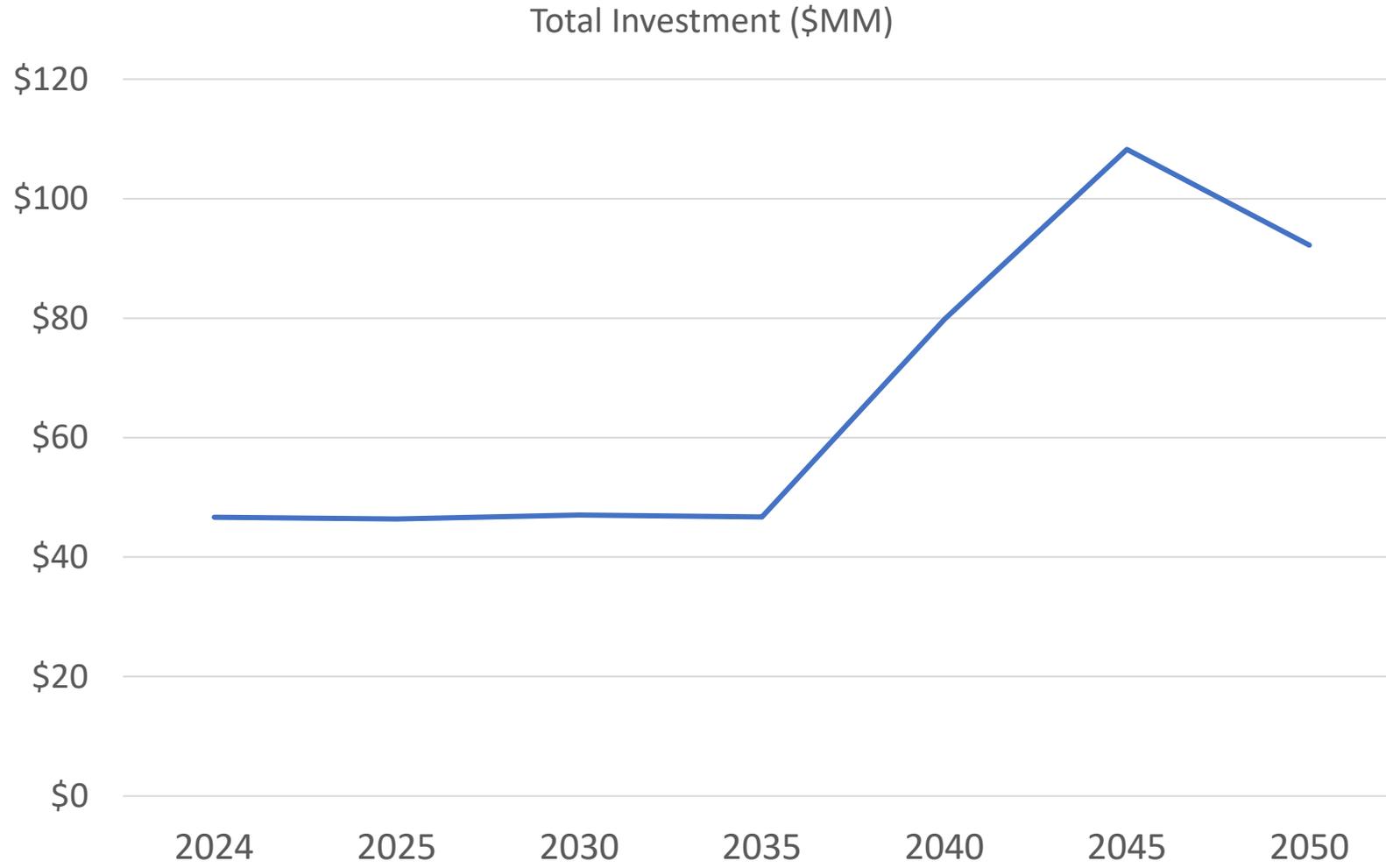
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Hydrogen	0	117	456	656	1,042	1,232
Biofuels	1,074	1,076	1,074	1,313	1,526	1,409
Sub-total	1,074	1,193	1,530	1,969	2,568	2,641
Change		120	456	895	1,494	1,567
Displacement Sub-Sectors						
Natural Gas Production, Trade, and Support Services	53	38	23	21	14	9
Natural Gas Distribution	268	258	241	218	198	186
Other Fossil Fuels	136	128	93	57	31	20
Sub-total	458	424	357	295	243	214
Change		-34	-100	-162	-215	-243
Fuels OVERALL	1,531	1,617	1,887	2,264	2,810	2,855
Net Change from 2024		86	356	733	1,279	1,324

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

REFERENCE SCENARIO: FUELS – TOTALS, EAST OREGON

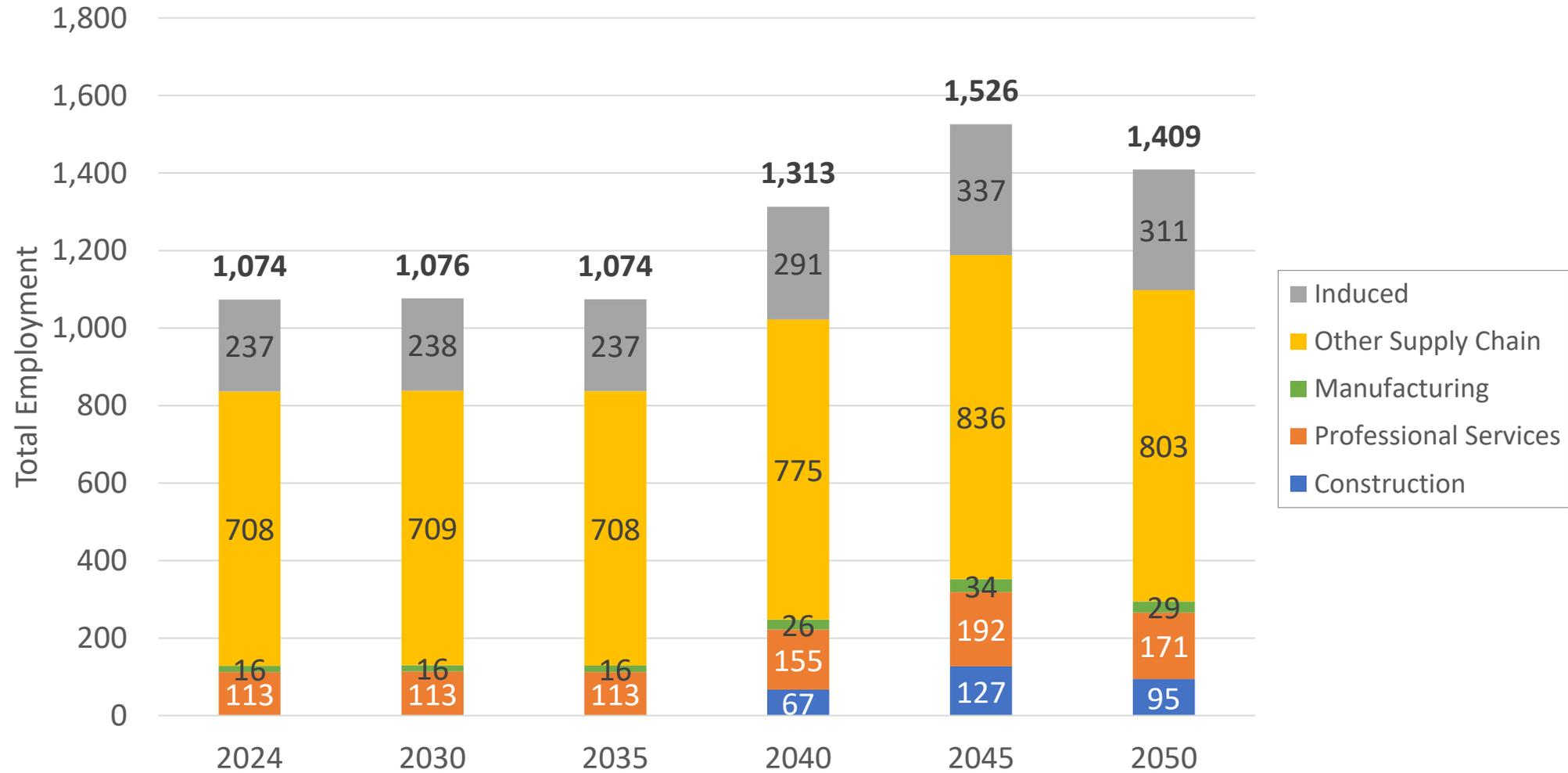


REFERENCE SCENARIO INPUTS: BIOFUELS, EAST OREGON

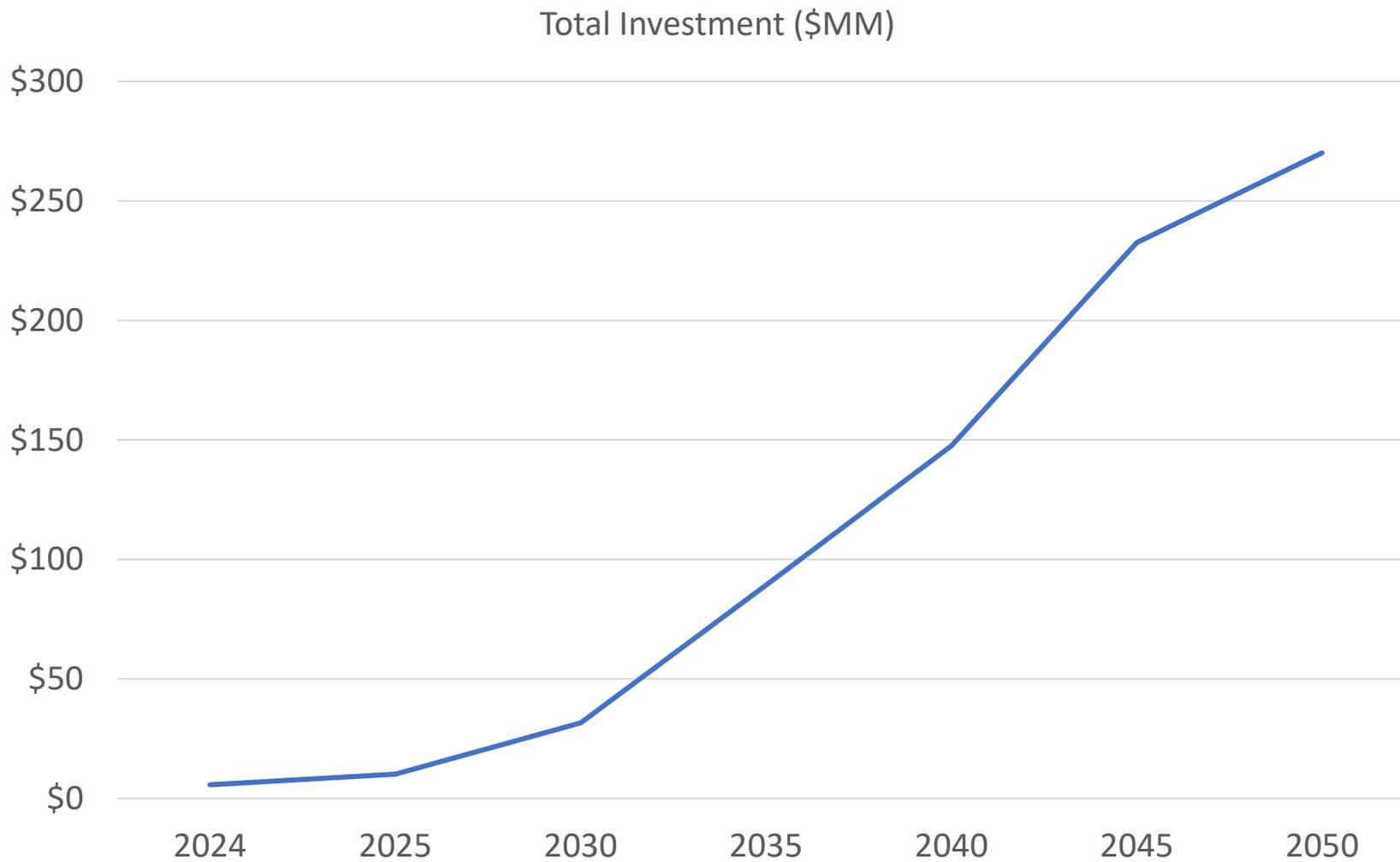


Investments in biofuel production and distribution jump starting in 2035.

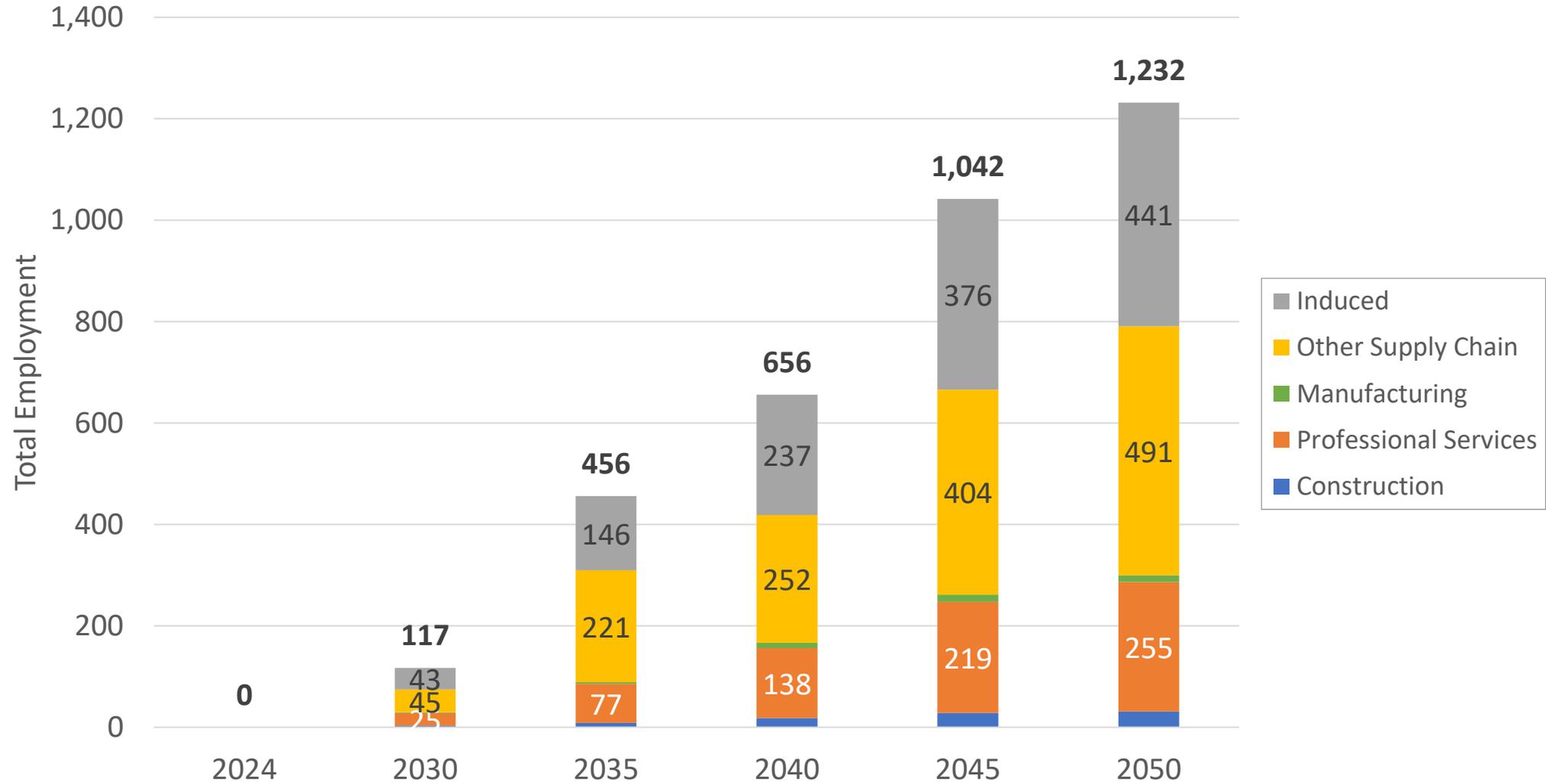
REFERENCE SCENARIO OUTPUTS: BIOFUELS, EAST OREGON



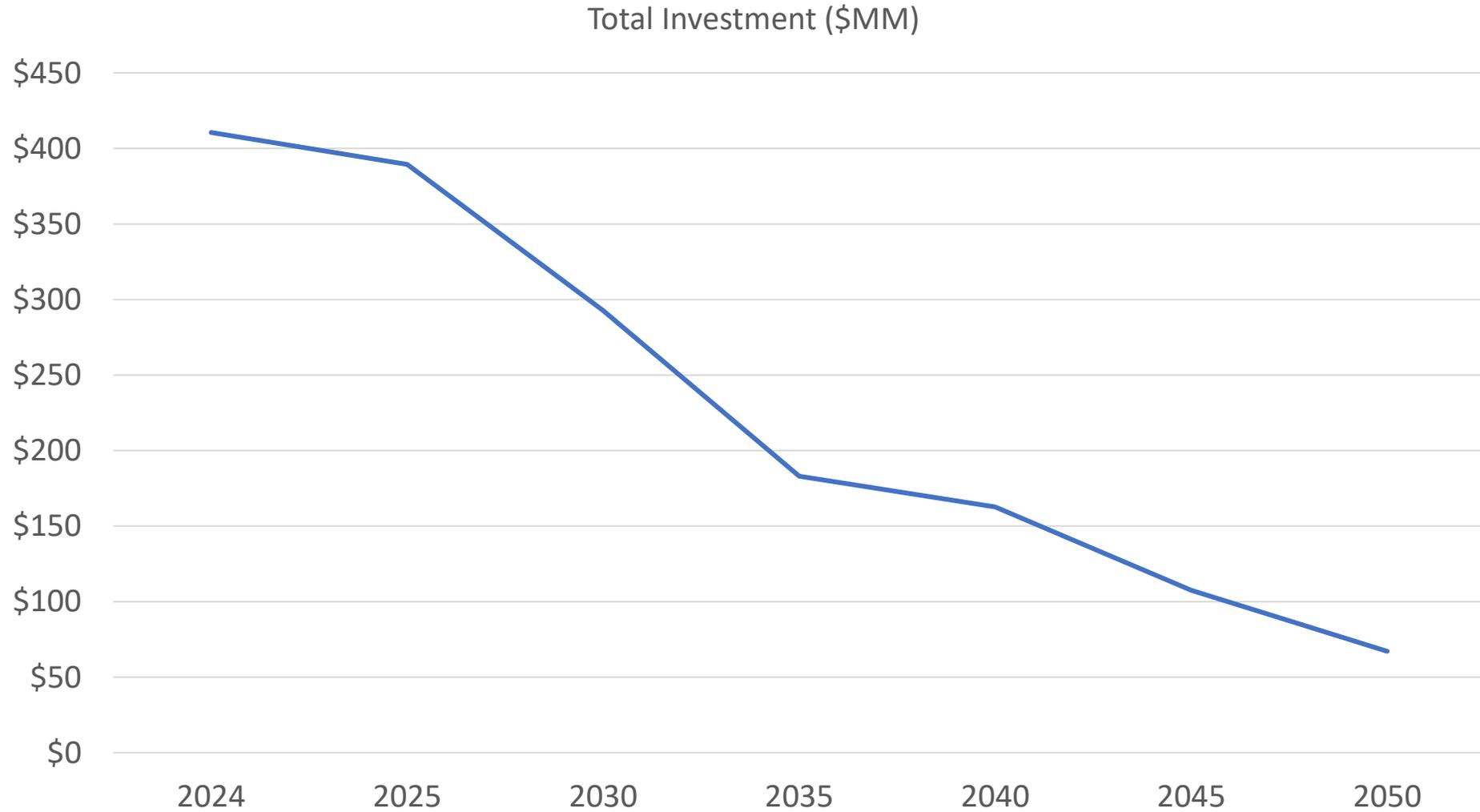
REFERENCE SCENARIO INPUTS: HYDROGEN, EAST OREGON



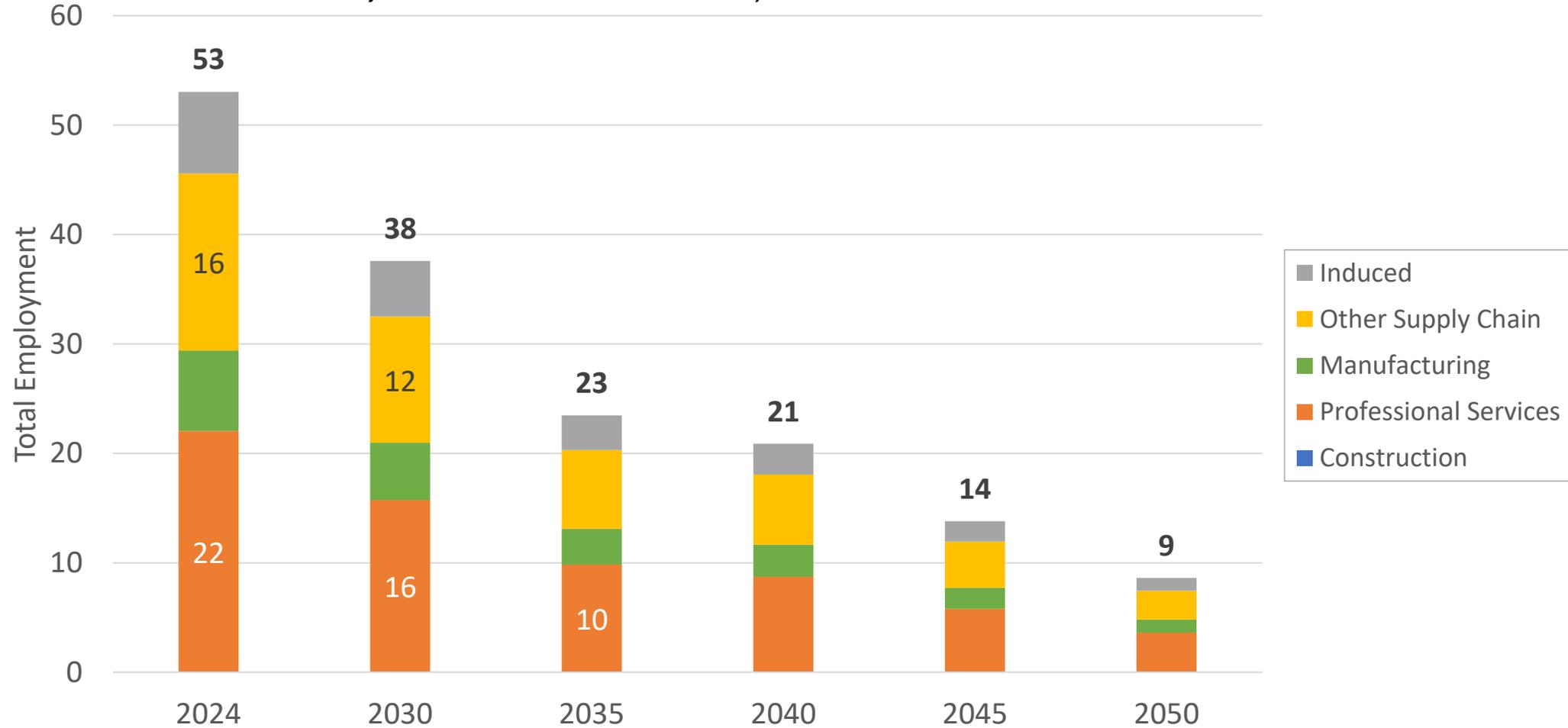
REFERENCE SCENARIO OUTPUTS: HYDROGEN, EAST OREGON



REFERENCE SCENARIO INPUTS: NATURAL GAS PRODUCTION, TRADE, AND SUPPORT SERVICES, EAST OREGON

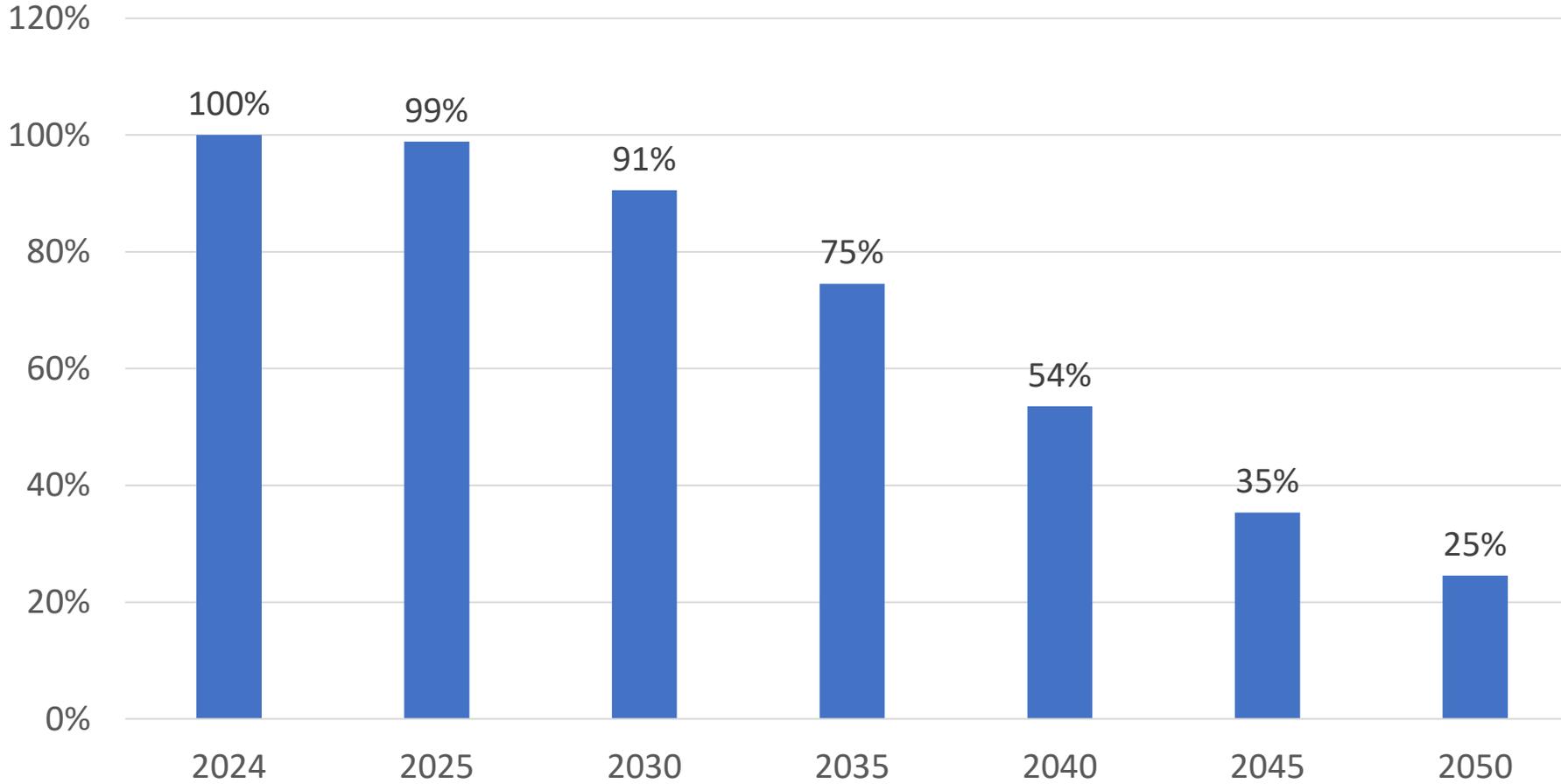


**REFERENCE SCENARIO OUTPUTS: NATURAL GAS PRODUCTION,
TRADE, AND SUPPORT SERVICES, EAST OREGON**



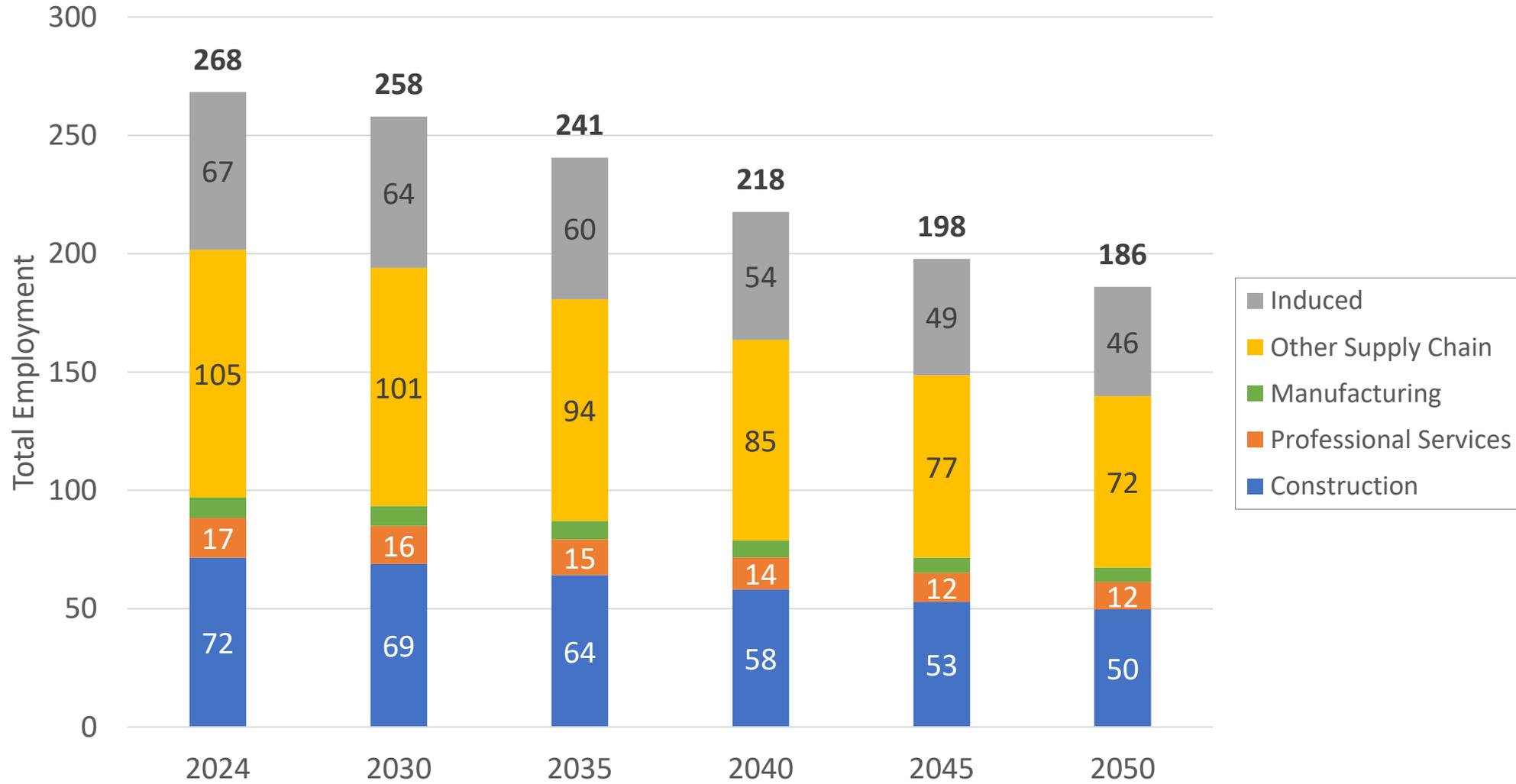
REFERENCE SCENARIO INPUTS: NATURAL GAS DISTRIBUTION, EAST OREGON

Pipeline Gas Demand Relative to 2024



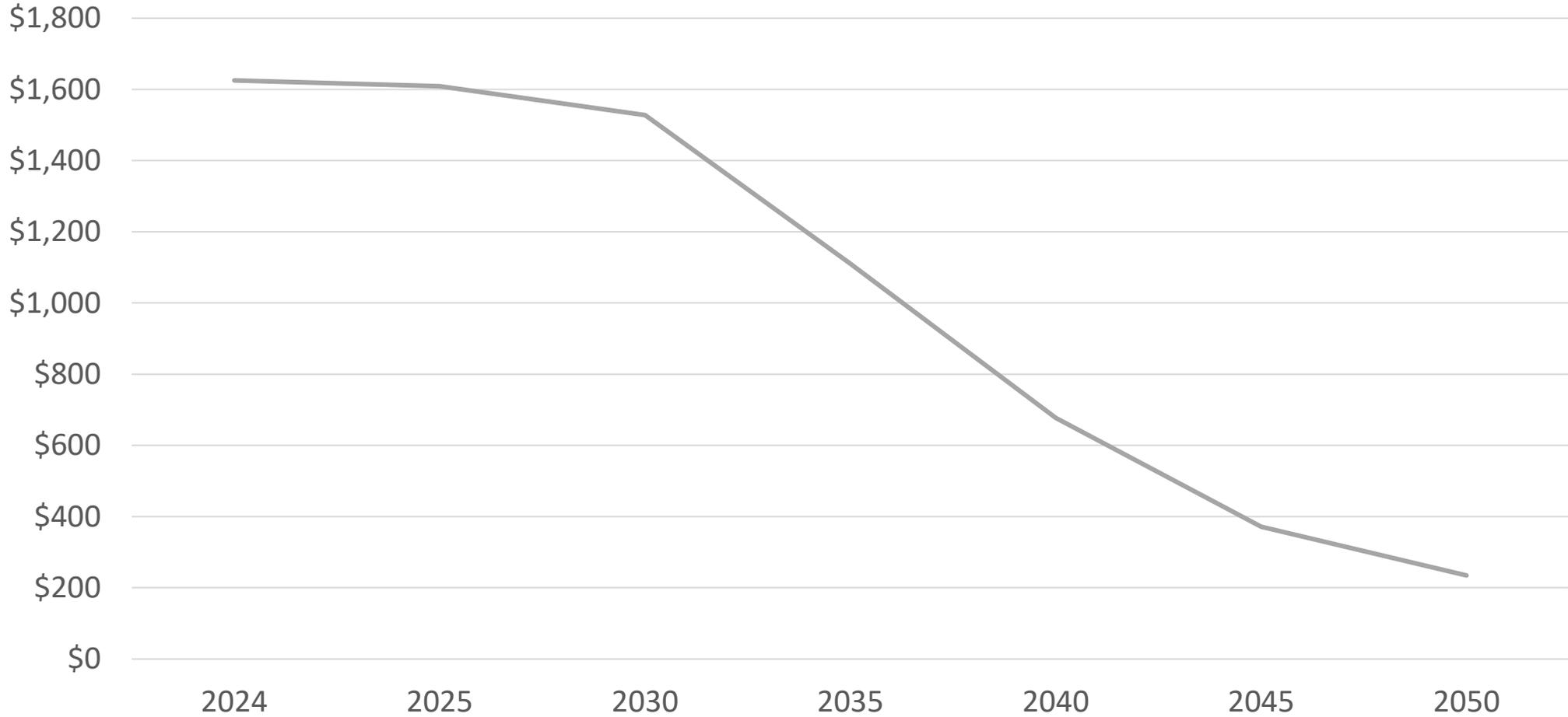
BWR uses pipeline gas demand derived from EER modeling to determine customer base, which serves as the input to the employment model.

REFERENCE SCENARIO OUTPUTS: NATURAL GAS DISTRIBUTION, EAST OREGON

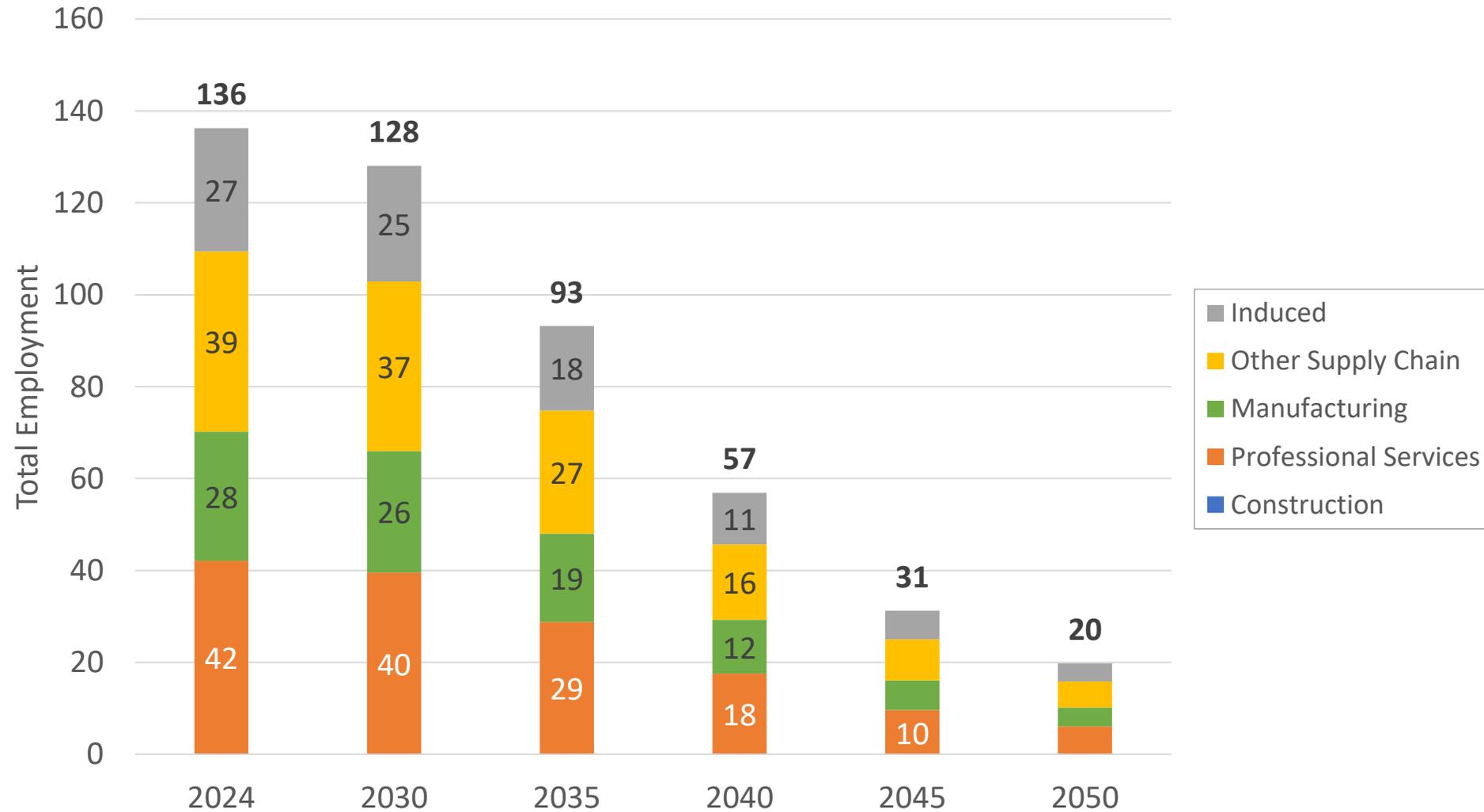


REFERENCE SCENARIO INPUTS: OTHER FOSSIL FUELS, EAST OREGON

Total Investment (\$MM)



REFERENCE SCENARIO OUTPUTS: OTHER FOSSIL FUELS, EAST OREGON

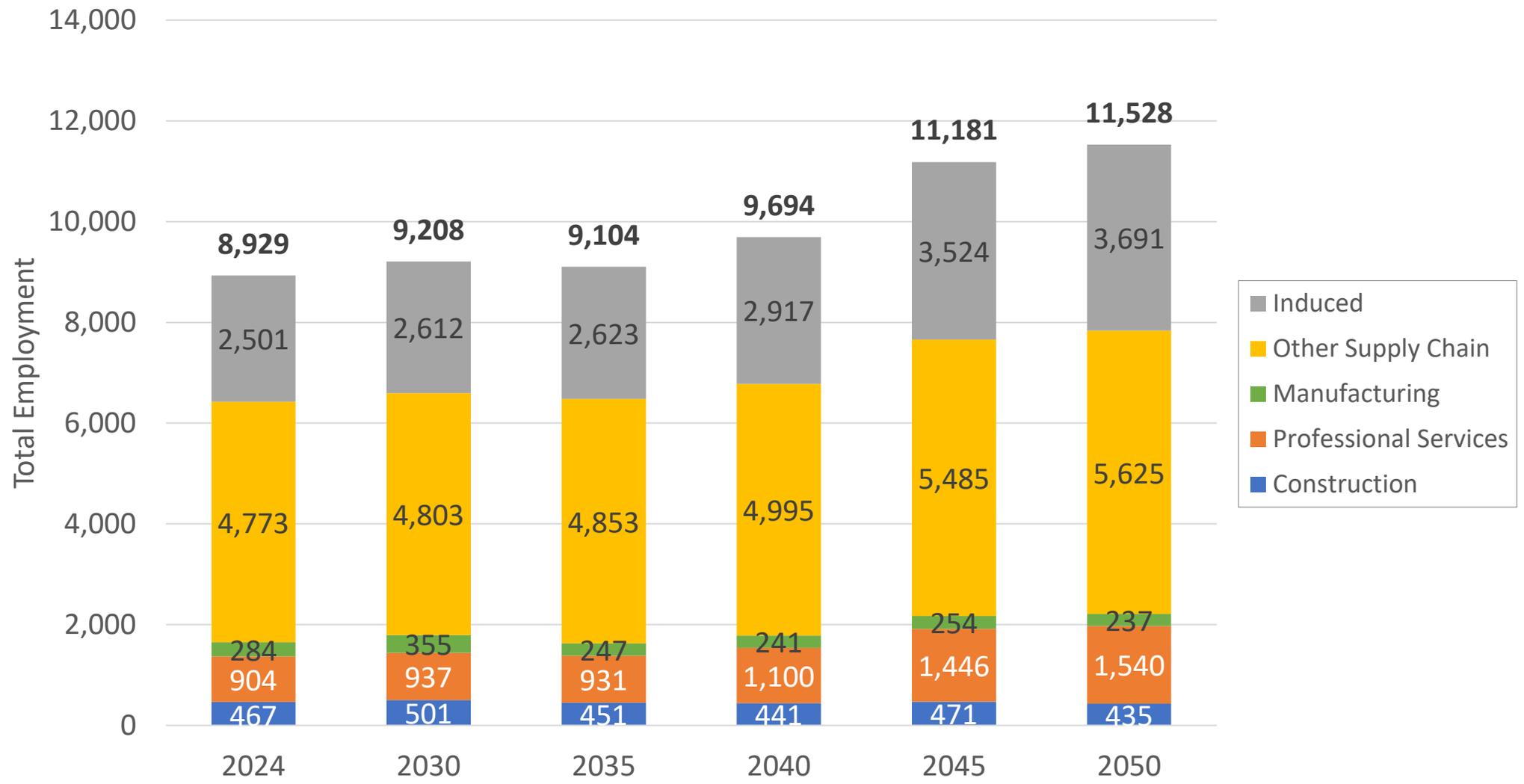


FUELS: REFERENCE, WEST OREGON*

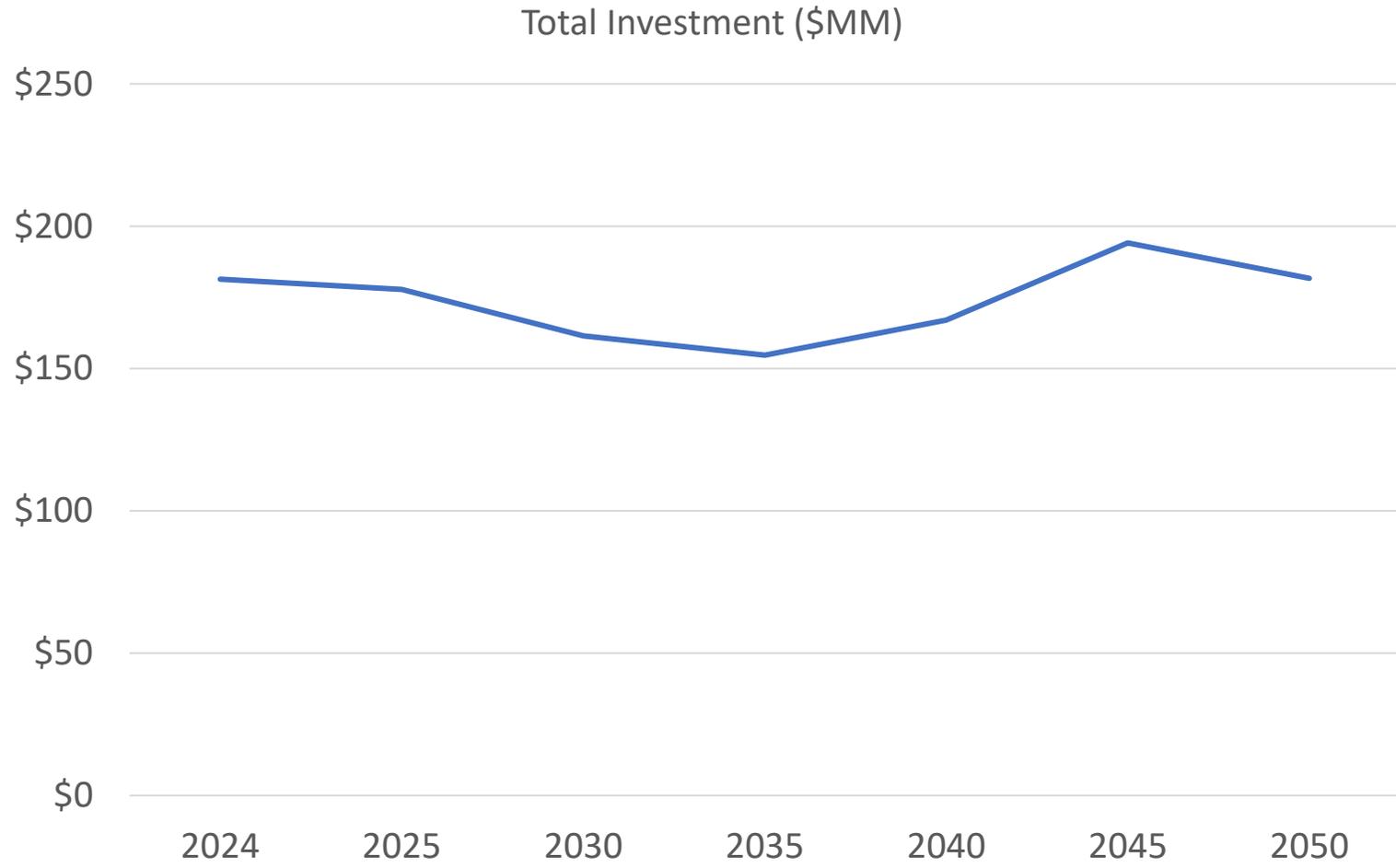
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Hydrogen	0	569	919	1,886	3,547	4,188
Sub-total	0	569	919	1,886	3,547	4,188
Change		569	919	1,886	3,547	4,188
Displacement Sub-Sectors						
Biofuels	5,110	5,002	4,966	5,045	5,237	5,131
Natural Gas Production, Trade, and Support Services	254	204	144	120	95	85
Natural Gas Distribution	2,929	2,836	2,663	2,412	2,181	2,056
Other Fossil Fuels	636	596	412	232	121	67
Sub-Total	8,929	8,639	8,186	7,809	7,634	7,340
Change		-290	-743	-1,120	-1,295	-1,589
Fuels OVERALL	8,929	9,208	9,104	9,694	11,181	11,528
Net Change from 2024		279	175	765	2,252	2,599

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

REFERENCE SCENARIO: FUELS – TOTALS, WEST OREGON

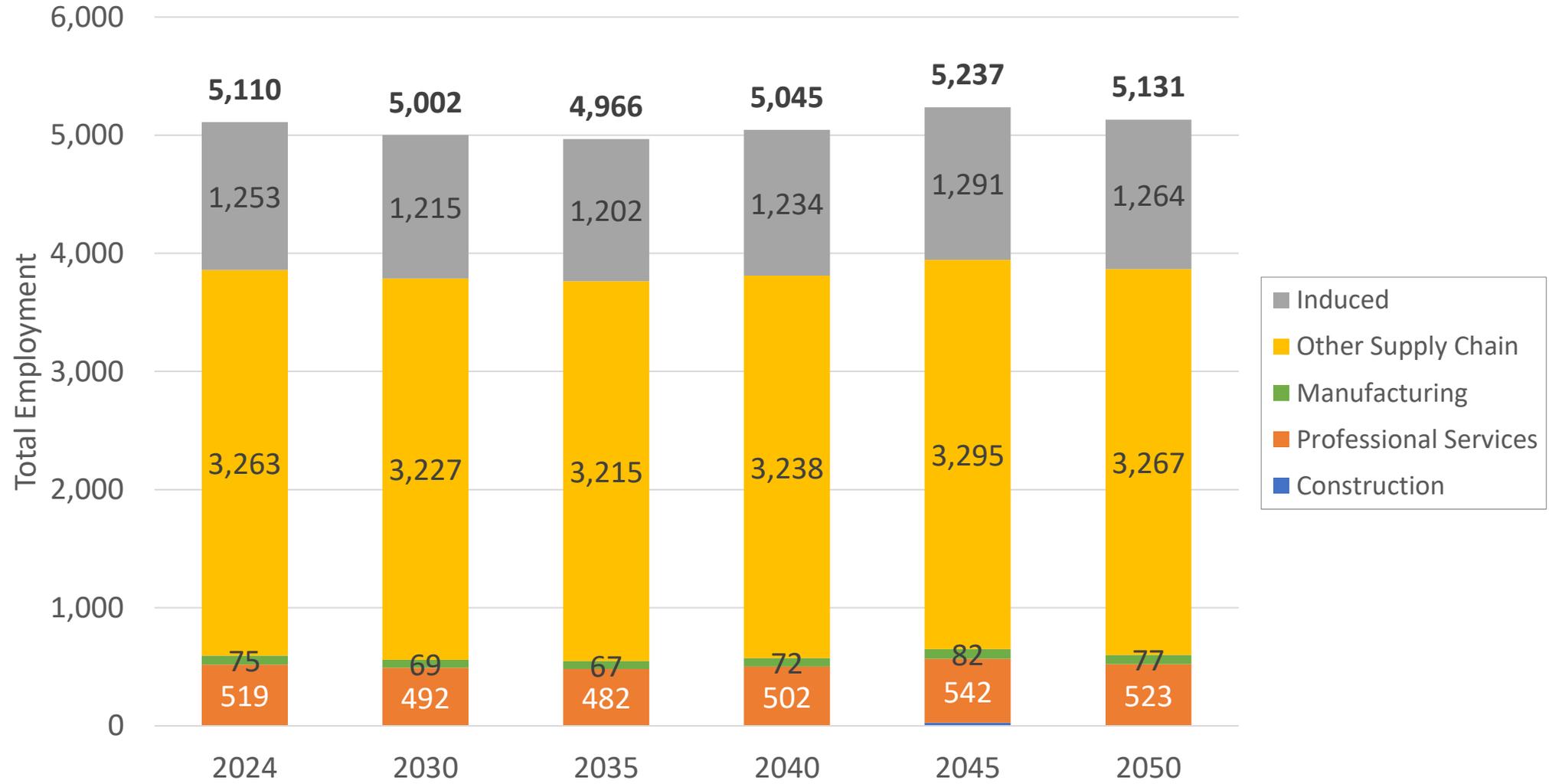


REFERENCE SCENARIO **INPUTS: BIOFUELS**, WEST OREGON



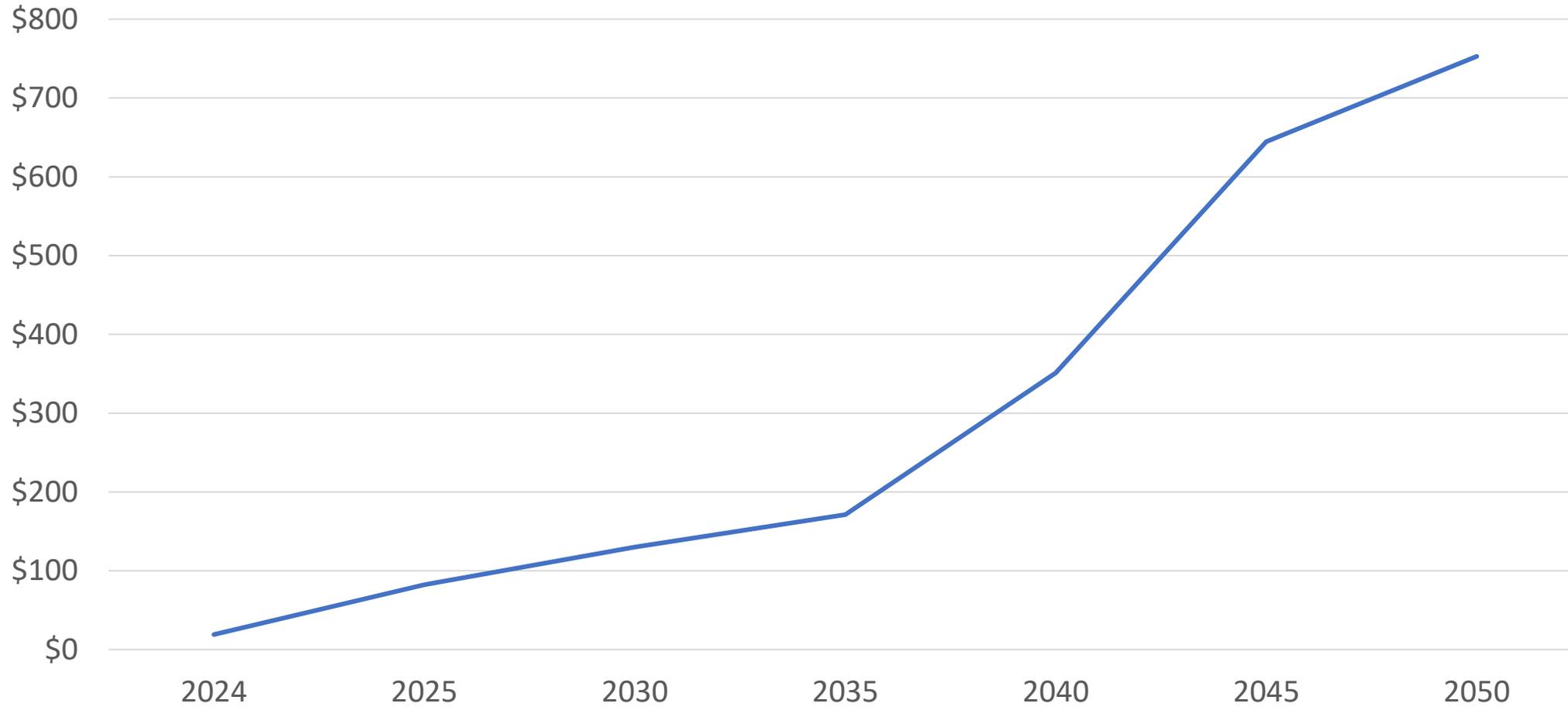
Investments in biofuel production and distribution decline through 2035 due to ongoing electrification of buildings and the vehicle fleet, then recover in later years.

REFERENCE SCENARIO **OUTPUTS: BIOFUELS**, WEST OREGON

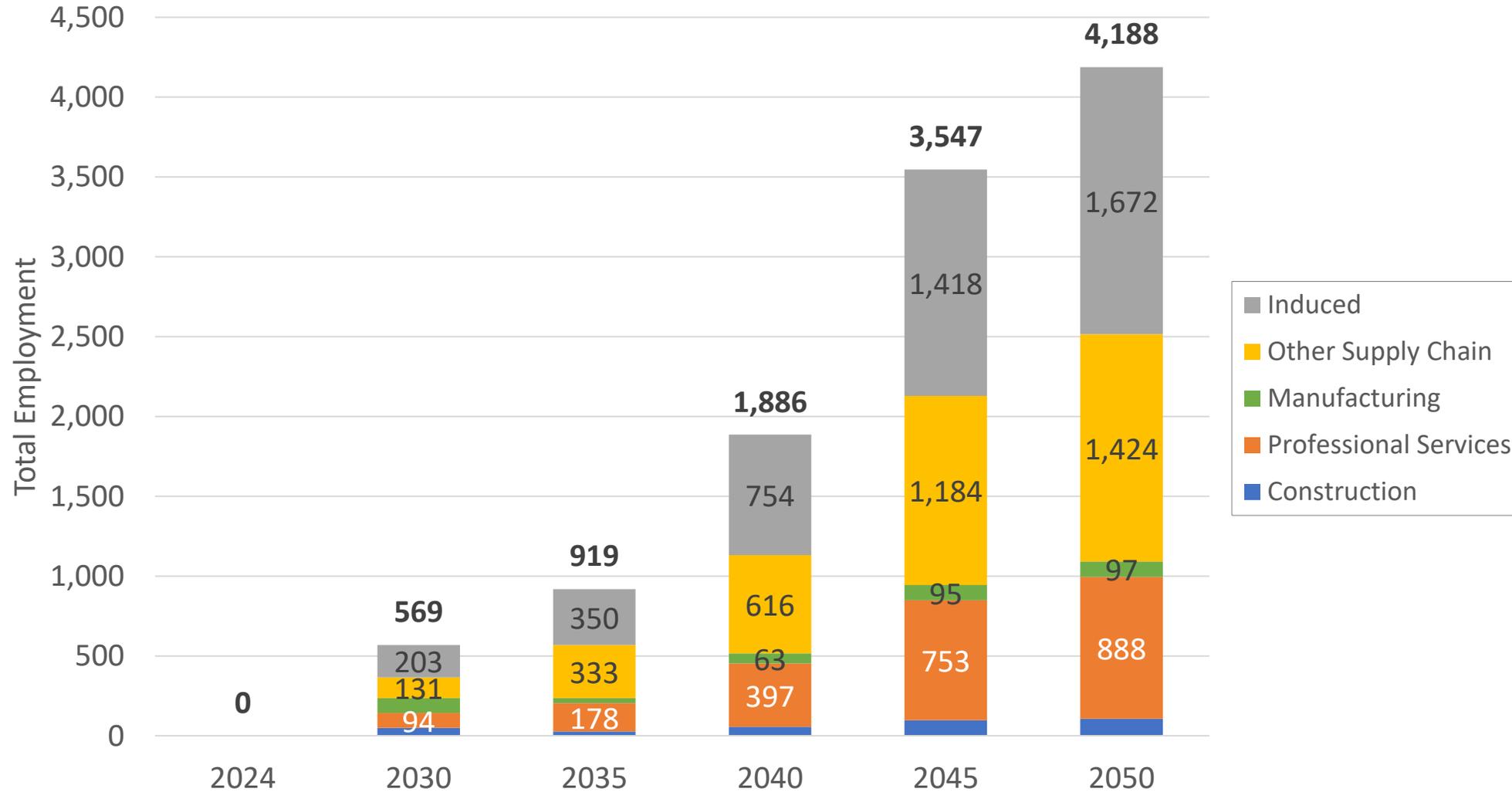


REFERENCE SCENARIO **INPUTS: HYDROGEN**, WEST OREGON

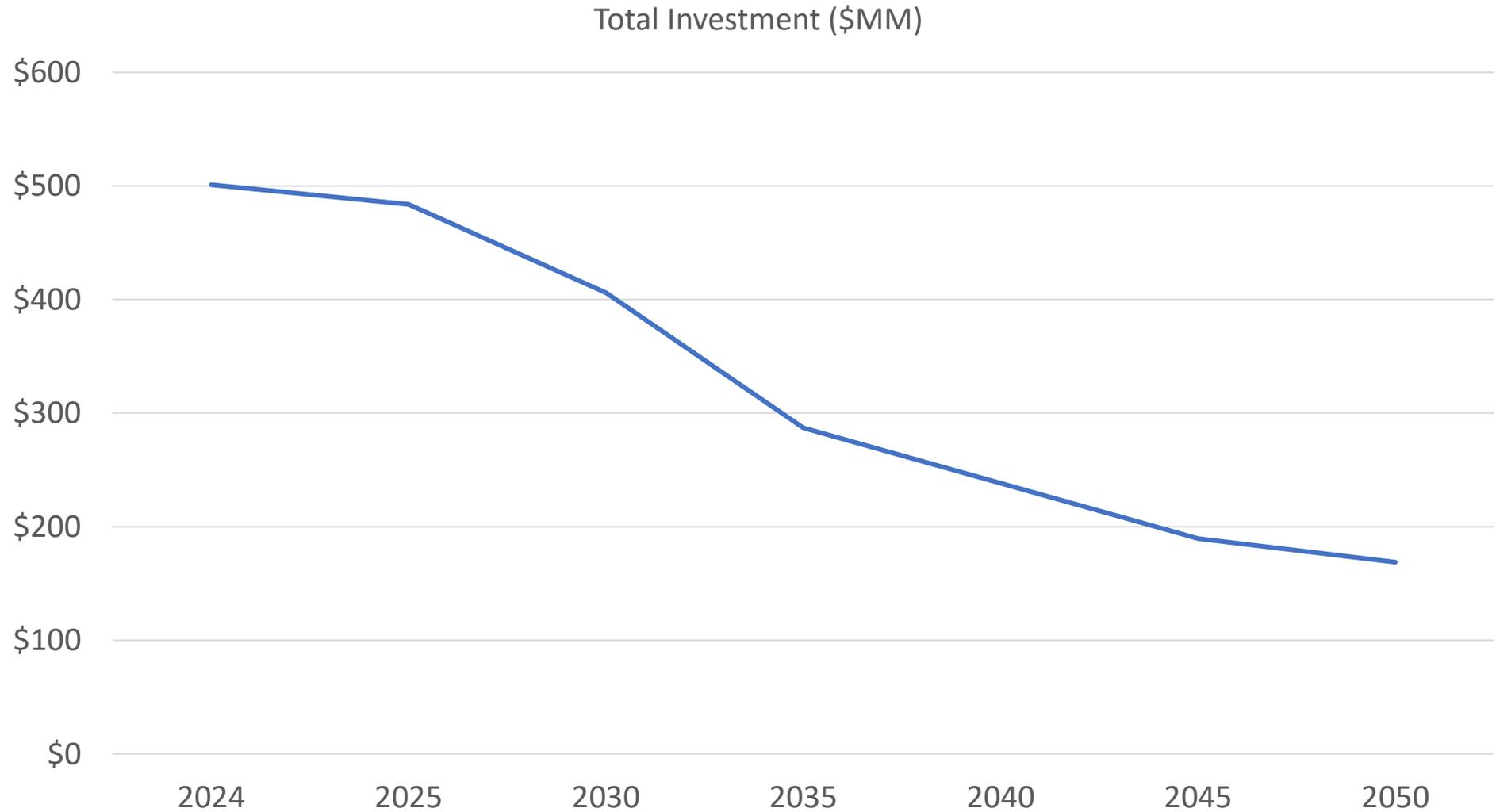
Total Investment (\$MM)



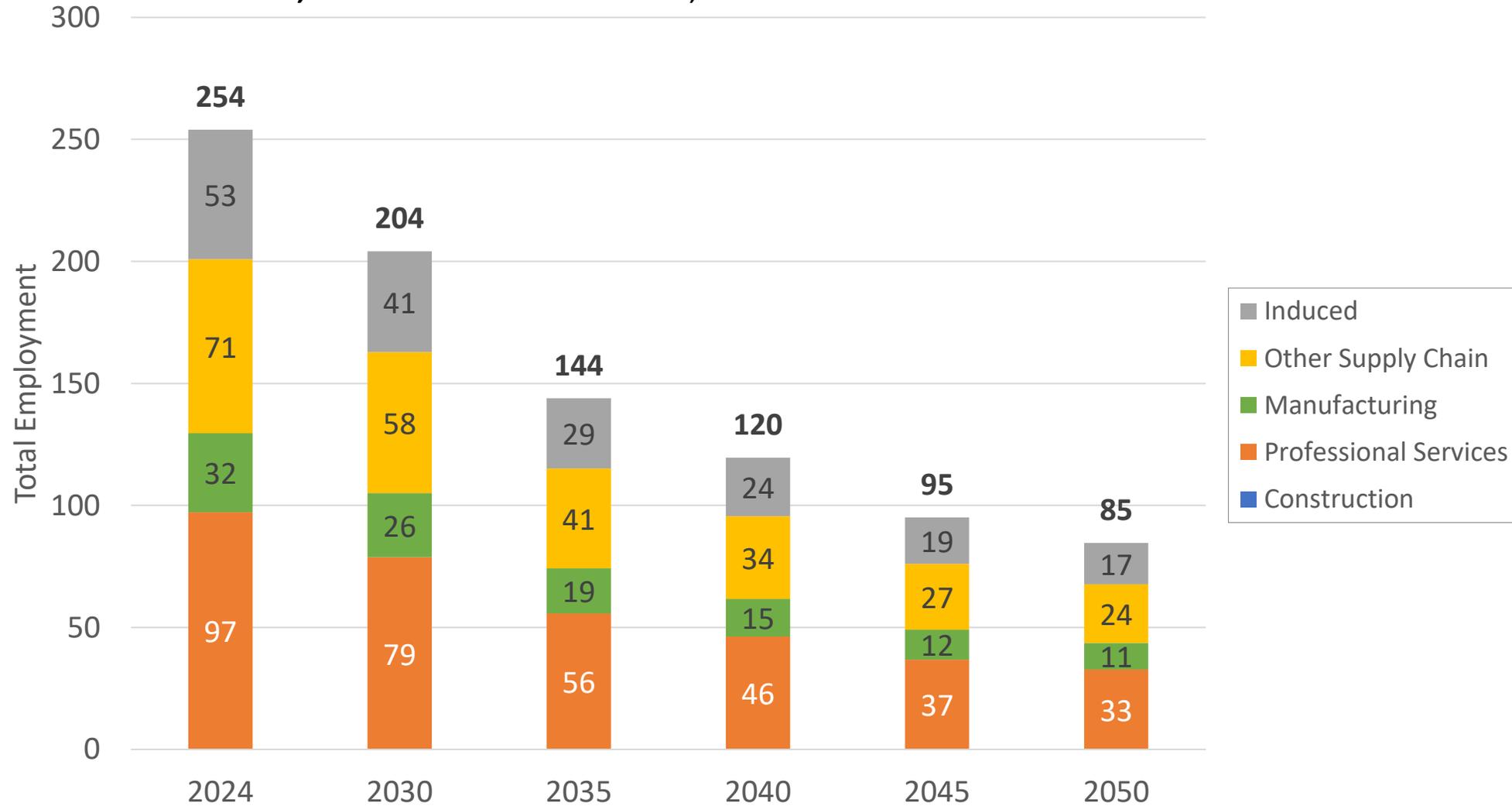
REFERENCE SCENARIO **OUTPUTS: HYDROGEN**, WEST OREGON



REFERENCE SCENARIO INPUTS: NATURAL GAS PRODUCTION, TRADE, AND SUPPORT SERVICES, WEST OREGON

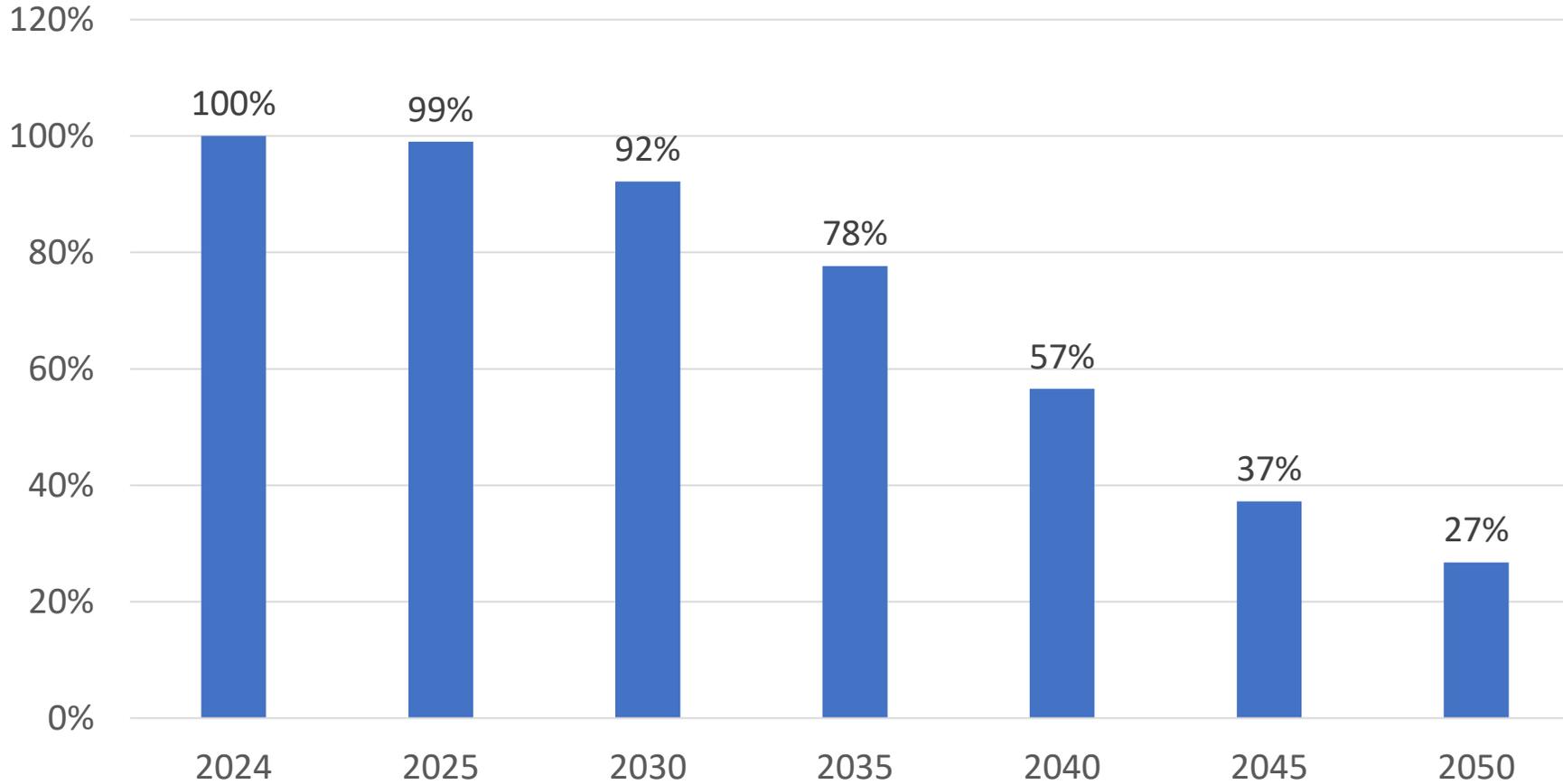


REFERENCE SCENARIO OUTPUTS: NATURAL GAS PRODUCTION, TRADE, AND SUPPORT SERVICES, WEST OREGON



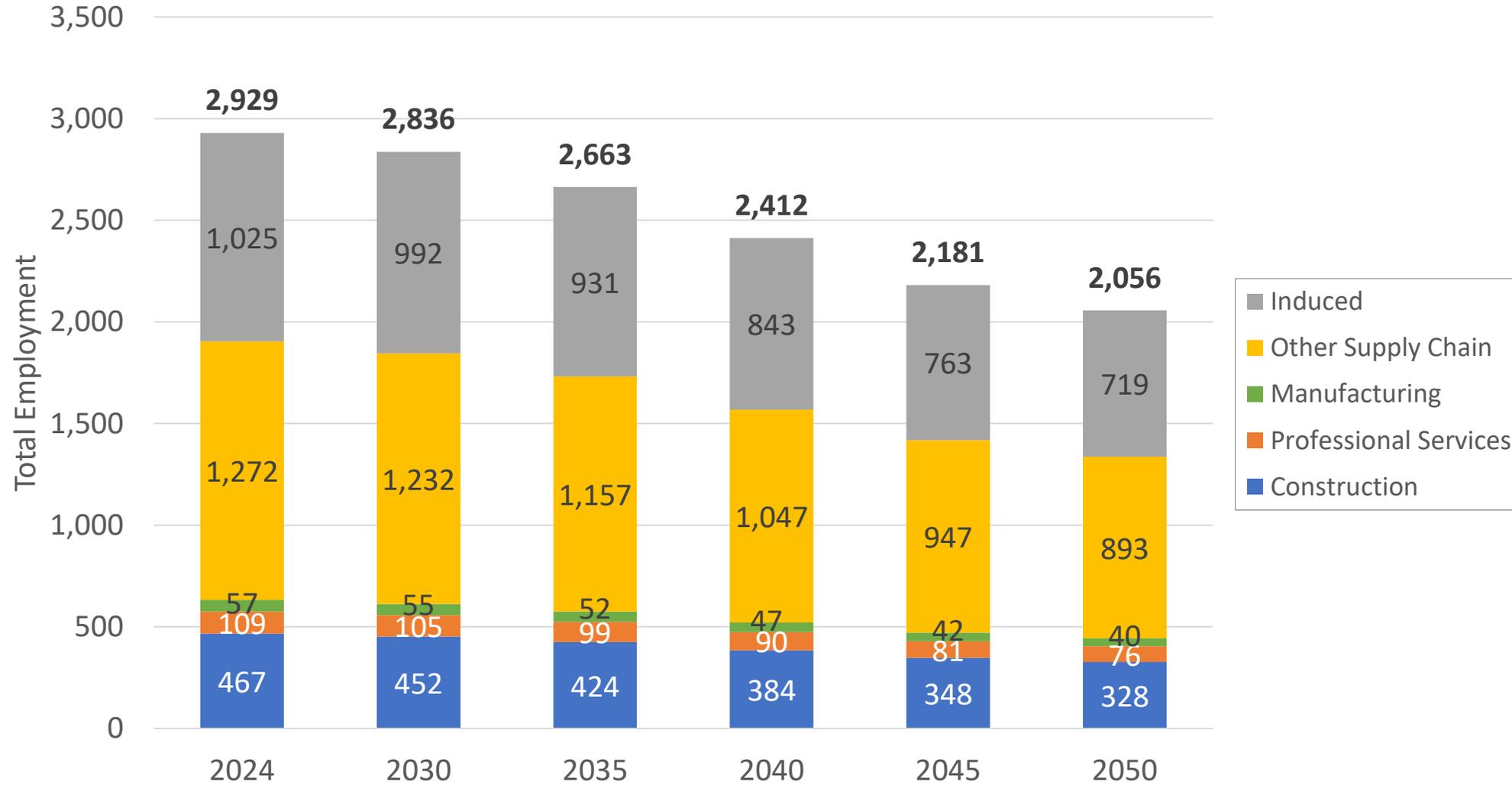
REFERENCE SCENARIO INPUTS: NATURAL GAS DISTRIBUTION, WEST OREGON

Pipeline Gas Demand Relative to 2024

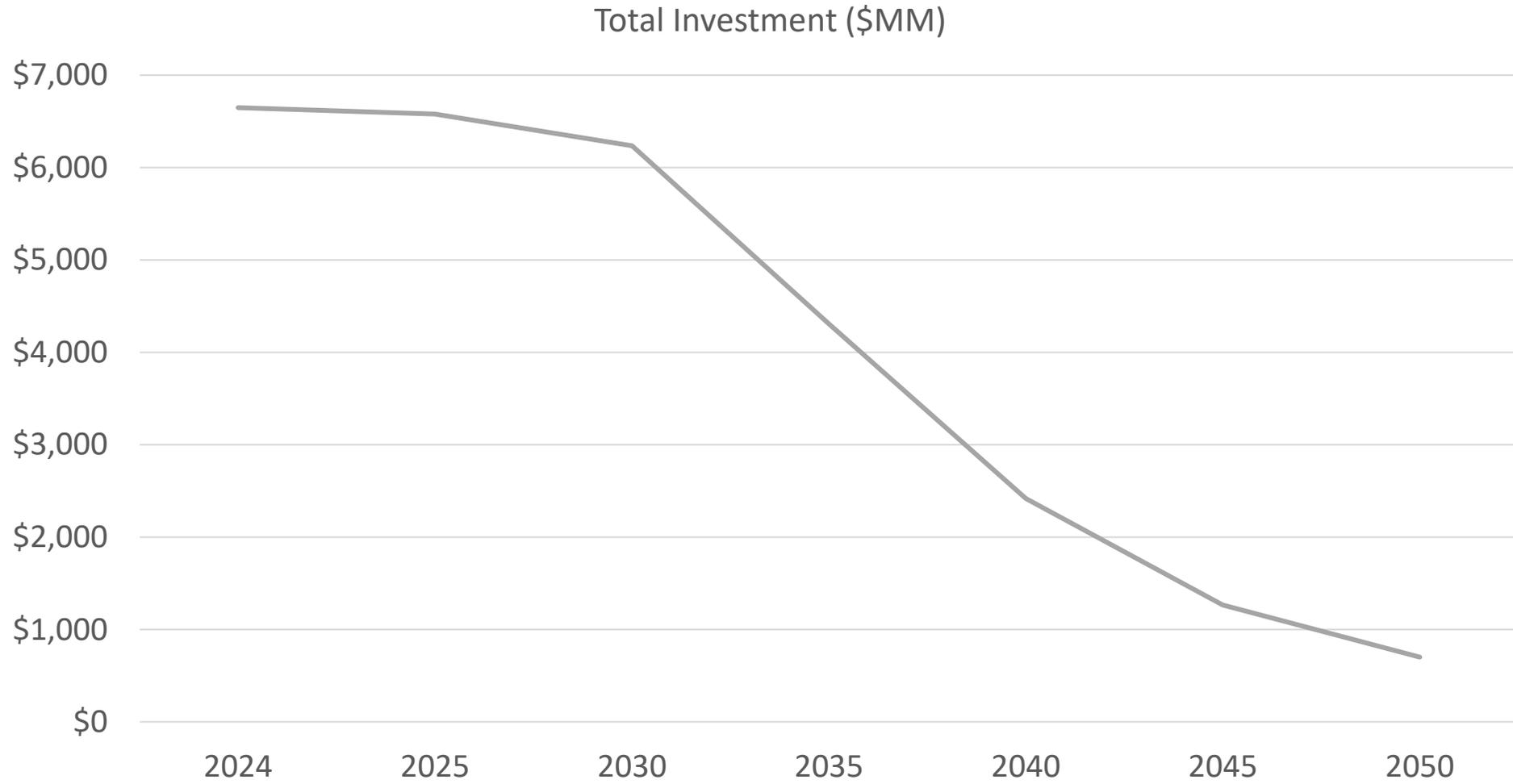


BWR uses pipeline gas demand derived from EER modeling to determine customer base, which serves as the input to the employment model.

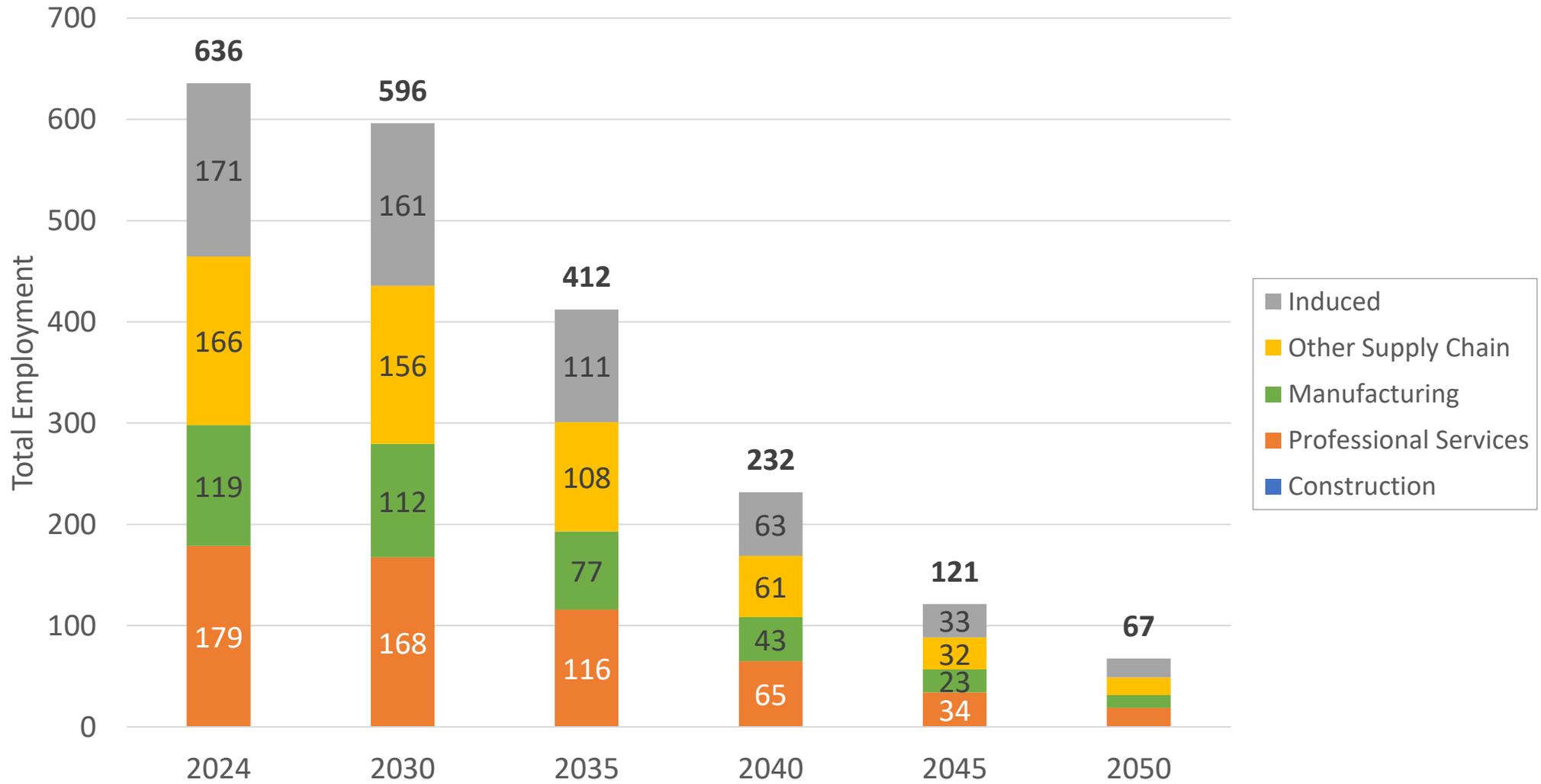
REFERENCE SCENARIO OUTPUTS: NATURAL GAS DISTRIBUTION, WEST OREGON



REFERENCE SCENARIO INPUTS: OTHER FOSSIL FUELS, WEST OREGON



REFERENCE SCENARIO OUTPUTS: OTHER FOSSIL FUELS, WEST OREGON



**Part 3:
Initial
Employment
Outputs**

Buildings

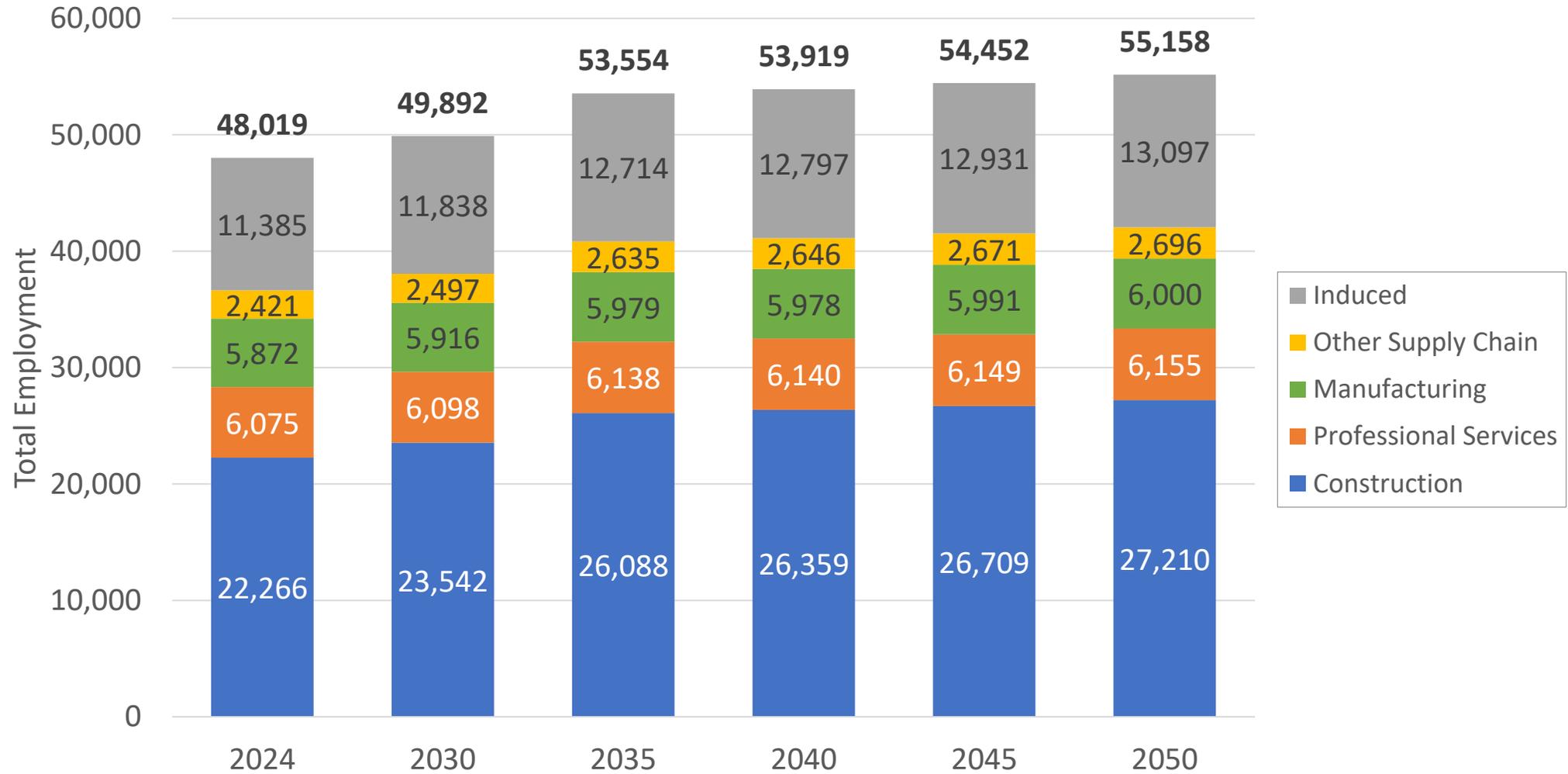
III. Buildings

- 1. Commercial HVAC**
- 2. Commercial Other**
- 3. Residential HVAC**
- 4. Residential Shell**
- 5. Residential Other**

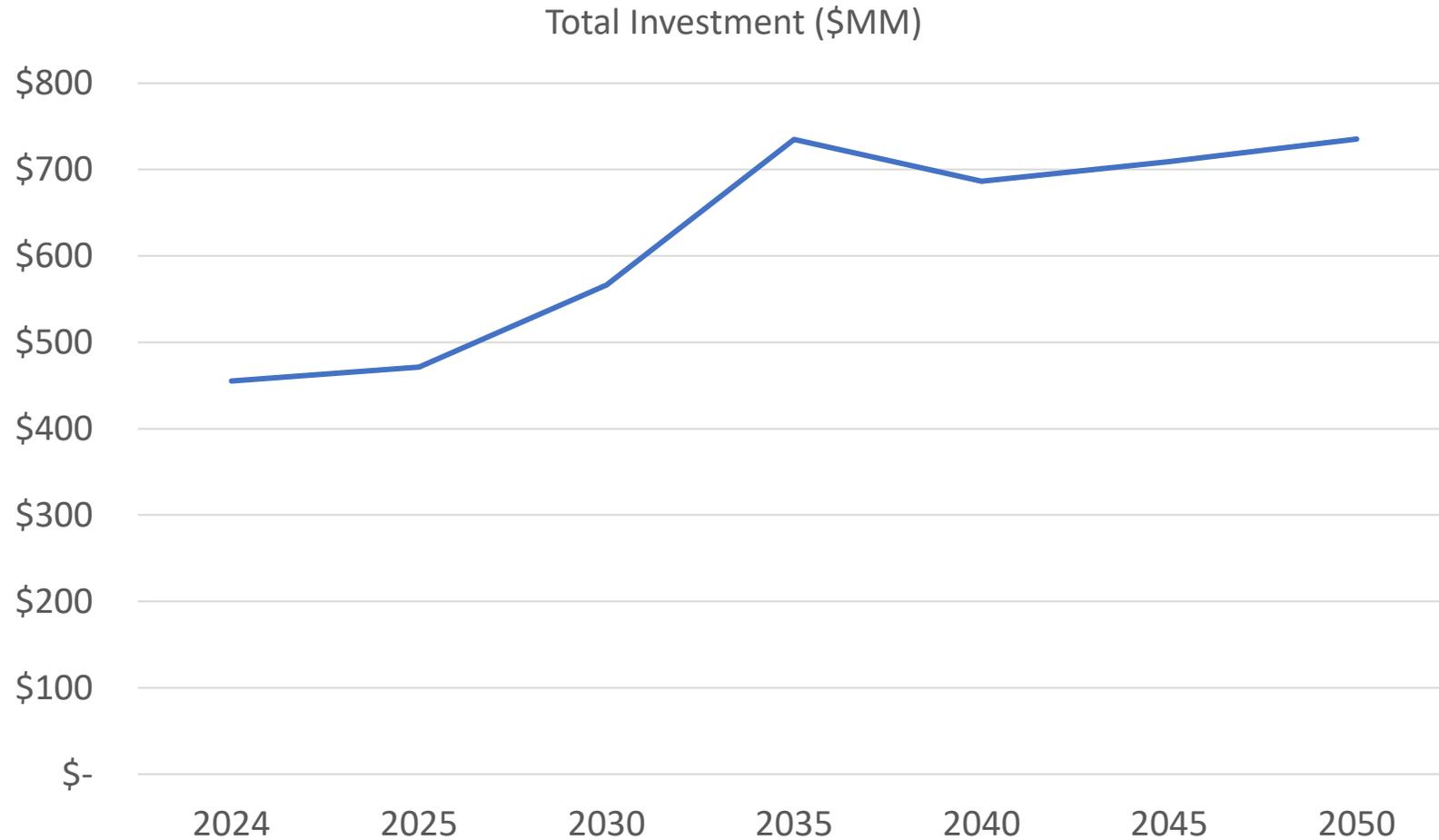
BUILDINGS: REFERENCE, OREGON

SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Commercial HVAC	11,230	11,992	13,145	12,814	12,970	13,149
Residential HVAC	15,833	15,801	16,341	16,531	16,813	17,061
Residential Shell	6,813	7,162	7,394	7,407	7,426	7,442
Commercial Other	5,870	6,320	6,962	7,204	7,753	7,717
Residential Other	8,273	8,617	9,712	9,963	9,490	9,789
Buildings OVERALL	48,019	49,892	53,554	53,919	54,452	55,158
Net Change from 2024		1,874	5,535	5,901	6,433	7,139

REFERENCE SCENARIO: **BUILDINGS – TOTALS, OREGON**

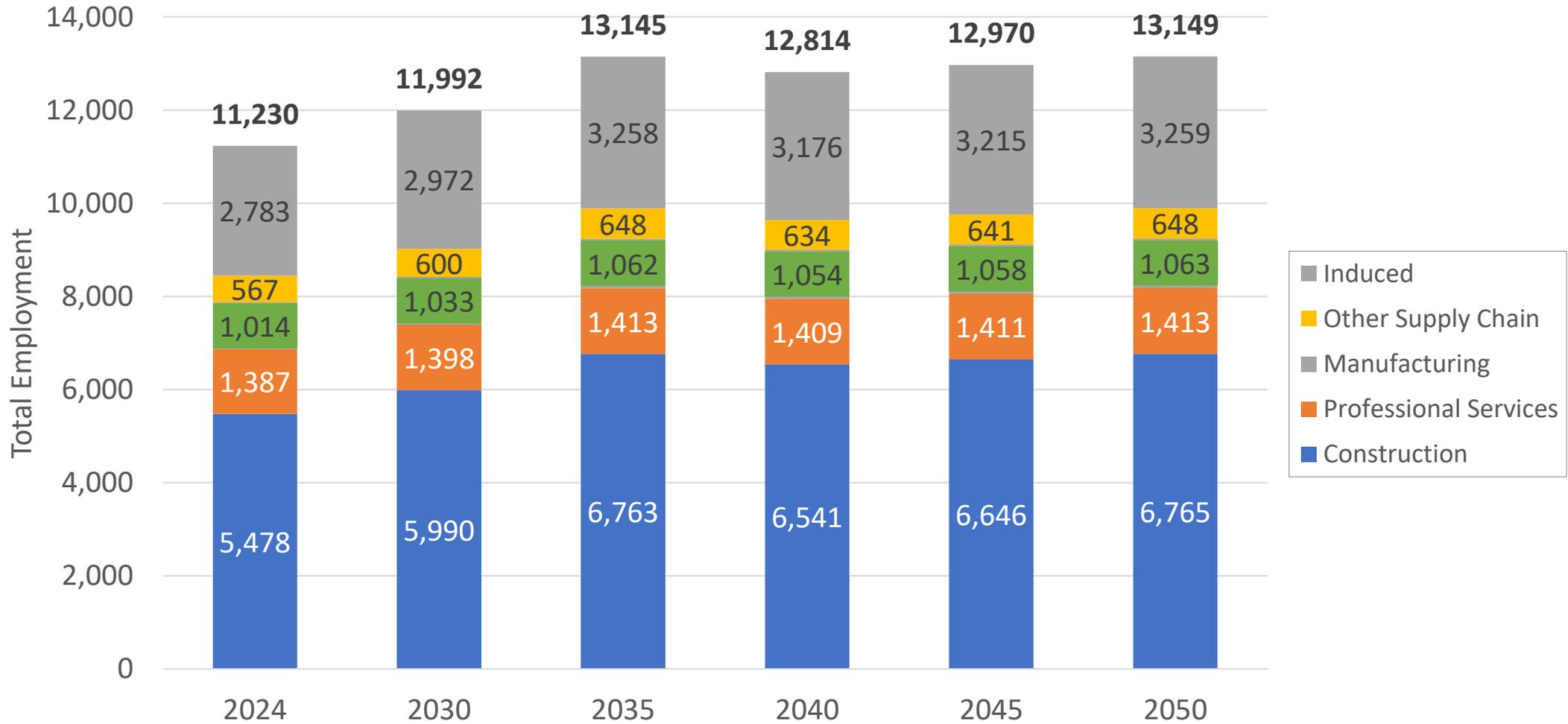


REFERENCE SCENARIO INPUTS: COMMERCIAL HVAC, OREGON



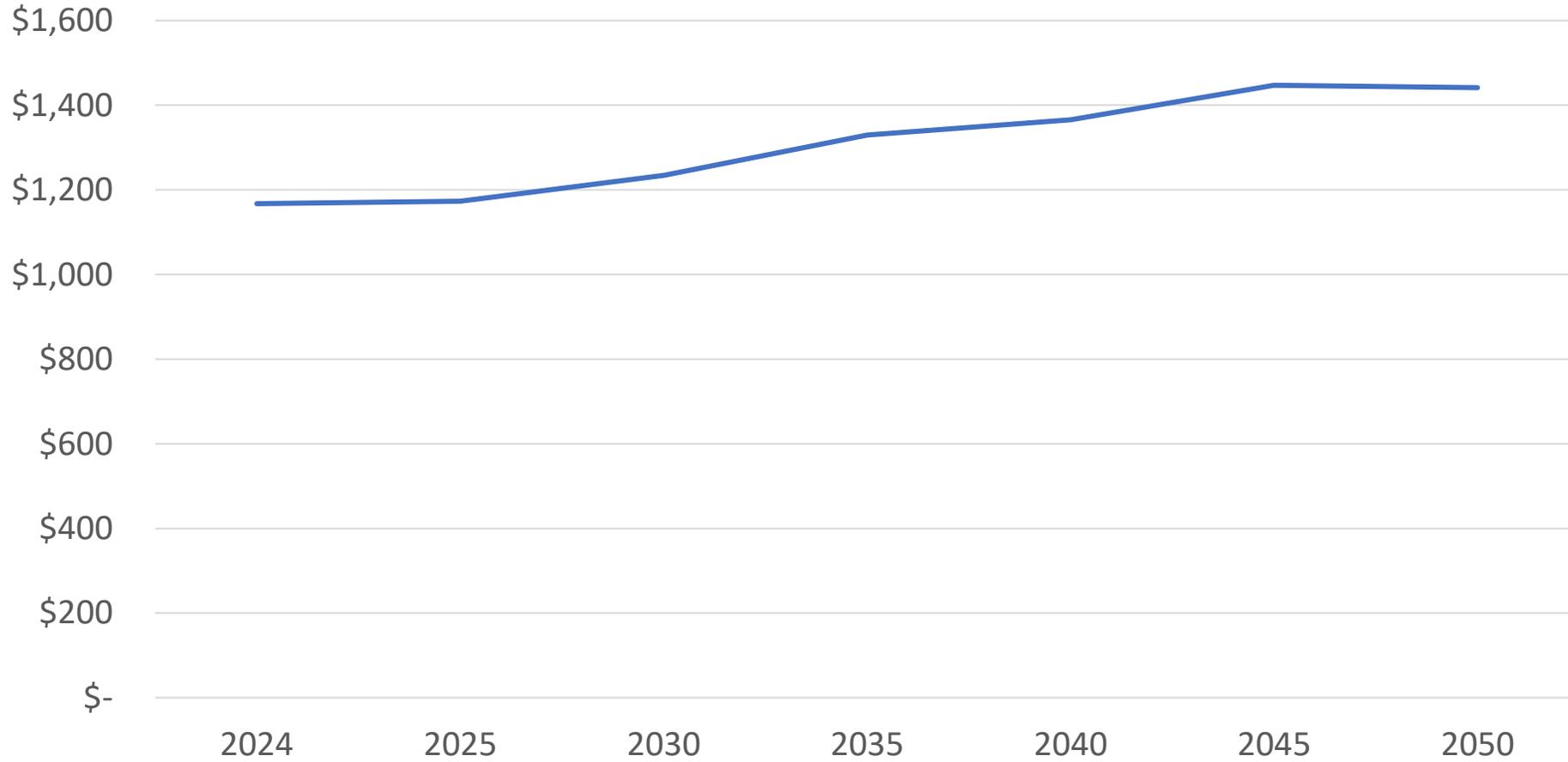
Investments in commercial HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: COMMERCIAL HVAC, OREGON

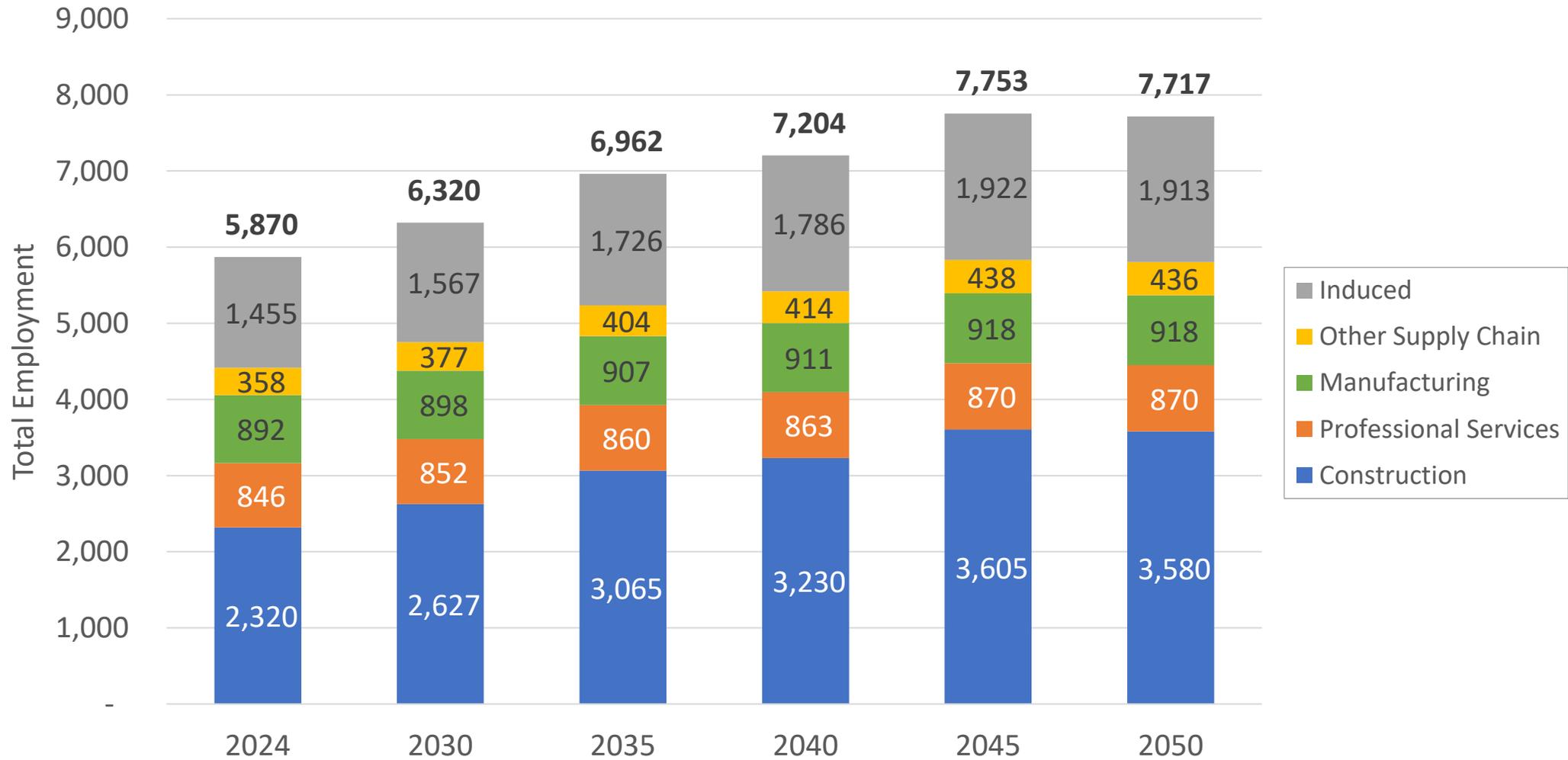


REFERENCE SCENARIO INPUTS: COMMERCIAL OTHER, OREGON

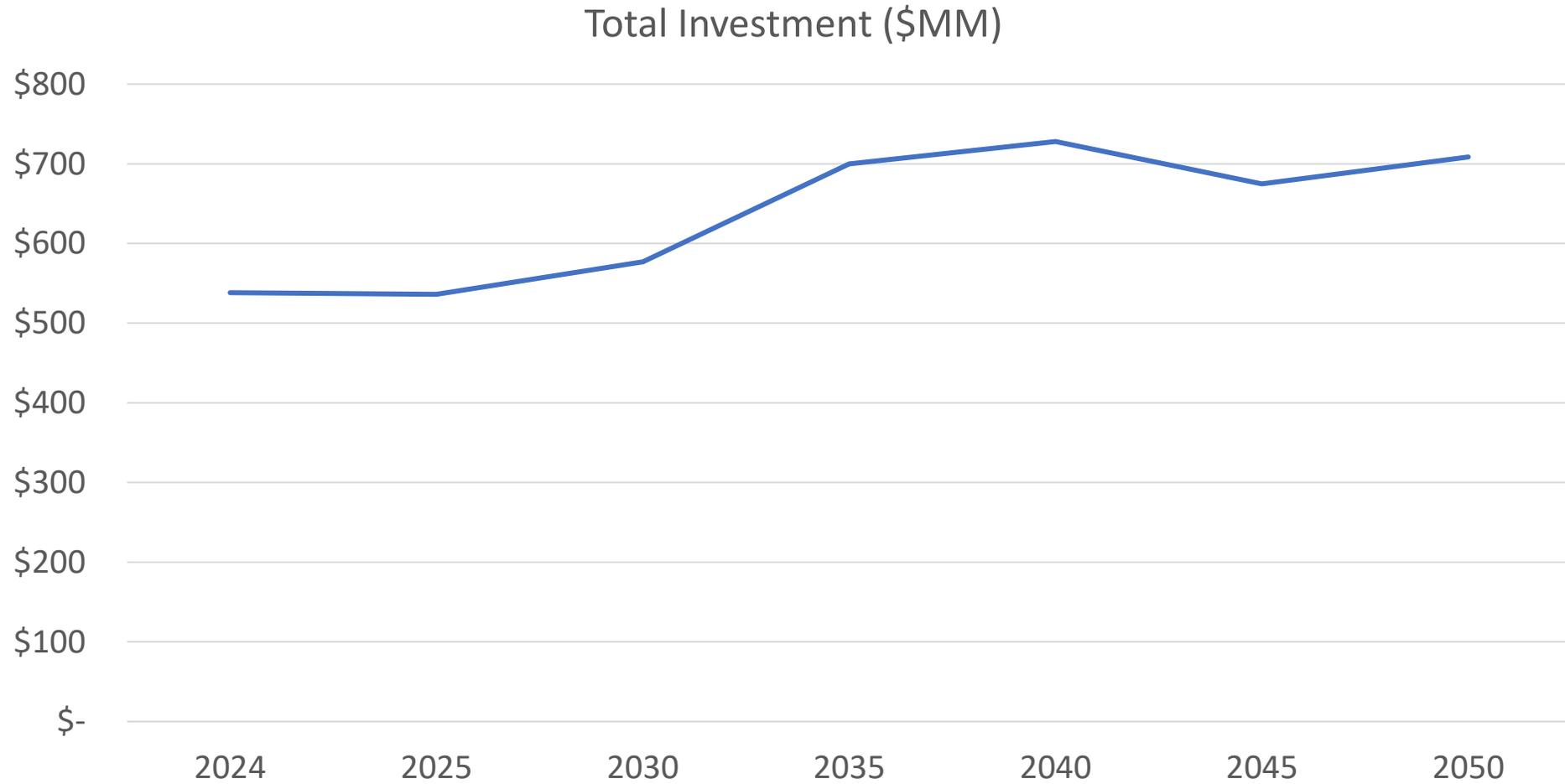
Total Investment (\$MM)



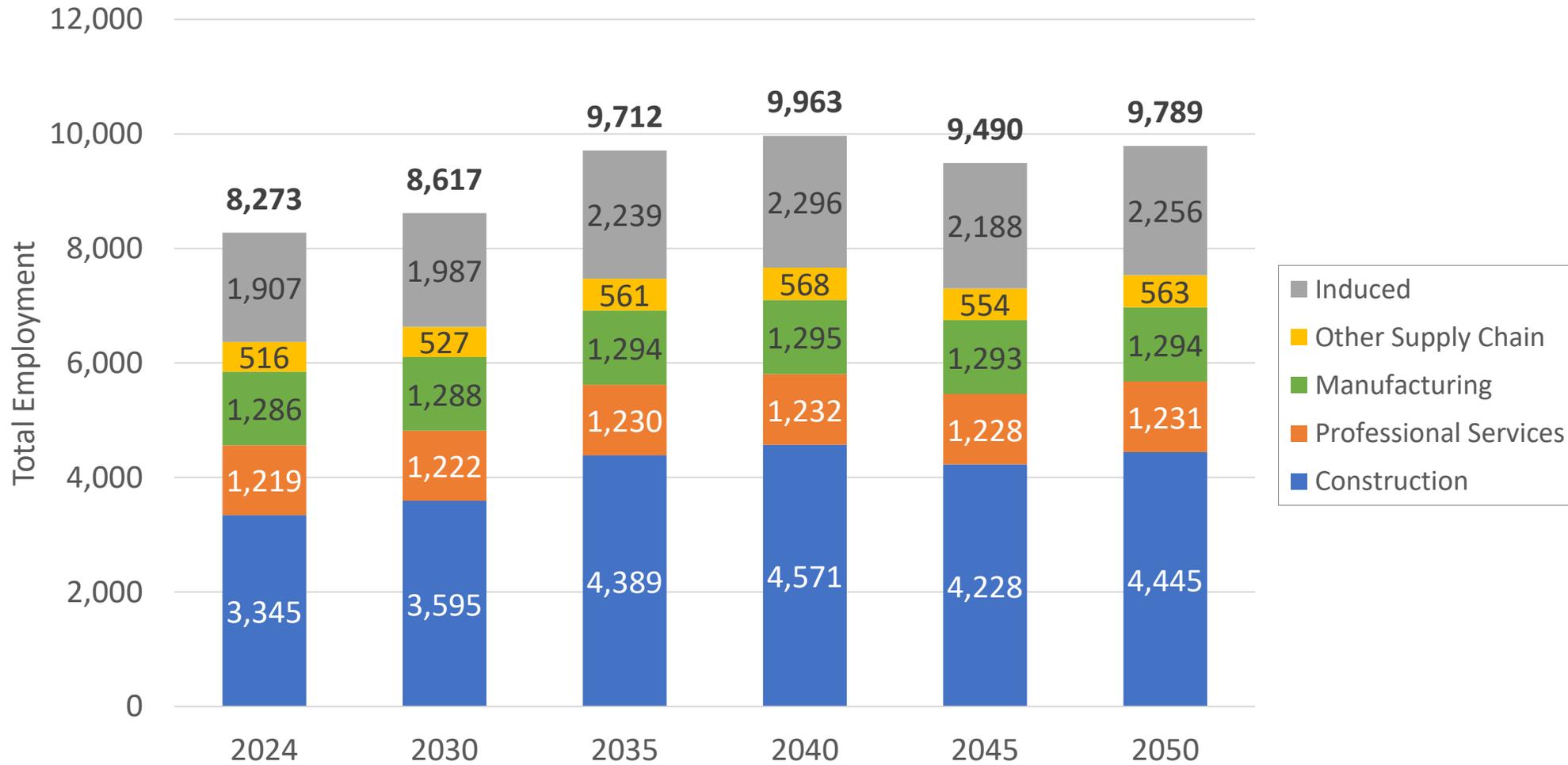
REFERENCE SCENARIO OUTPUTS: COMMERCIAL OTHER, OREGON



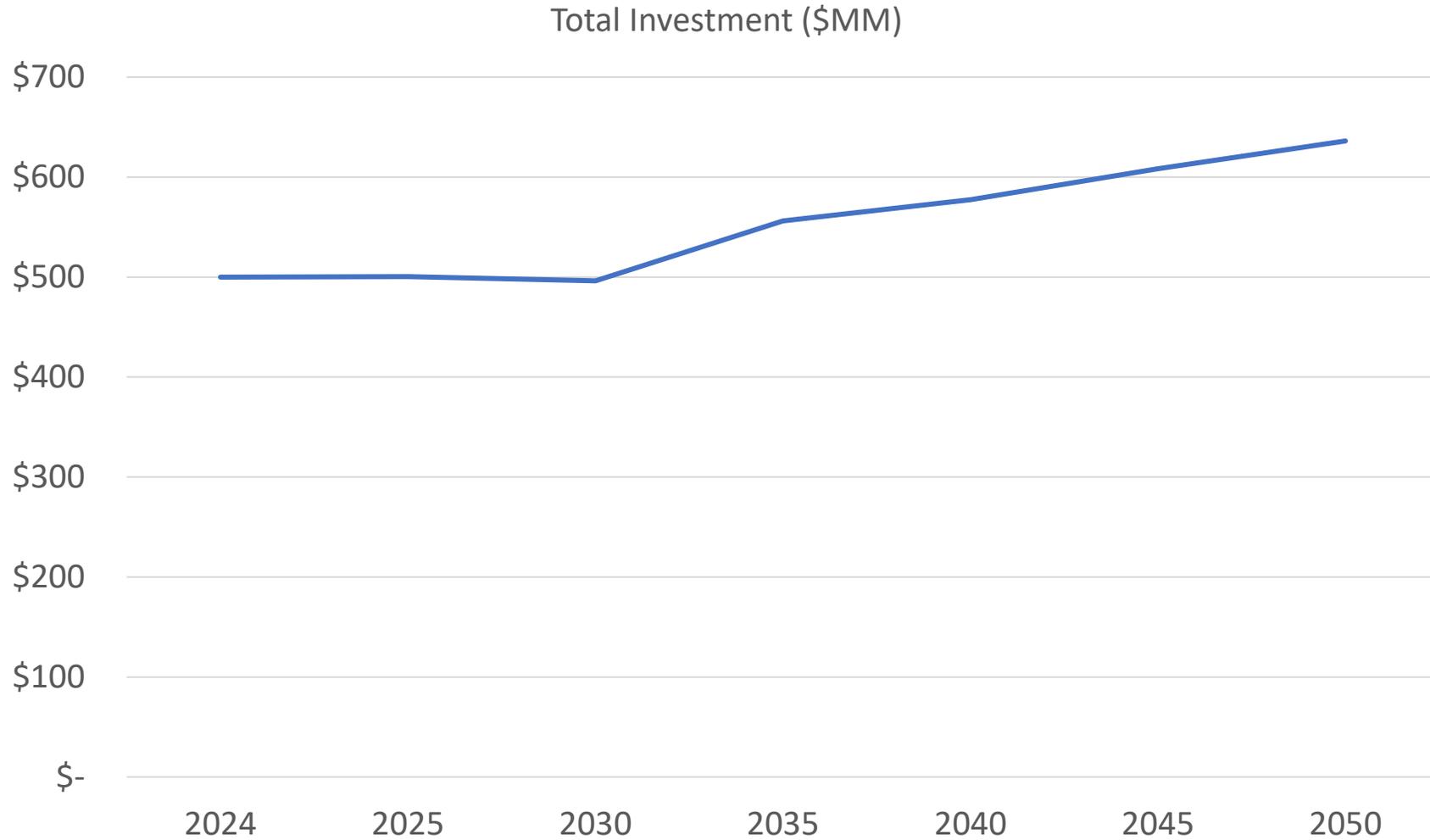
REFERENCE SCENARIO INPUTS: RESIDENTIAL OTHER, OREGON



REFERENCE SCENARIO OUTPUTS: RESIDENTIAL OTHER, OREGON

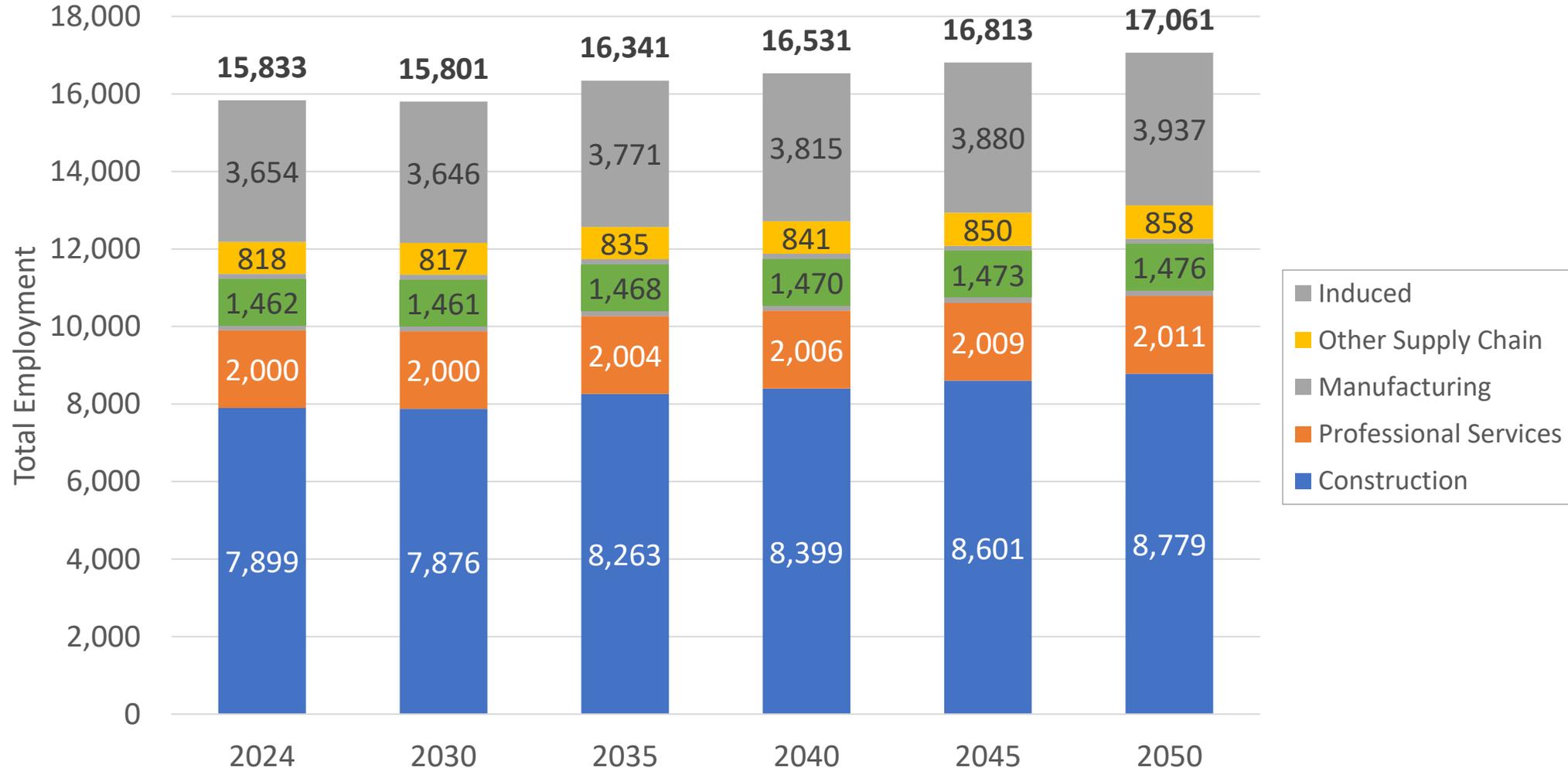


REFERENCE SCENARIO INPUTS: RESIDENTIAL HVAC, OREGON

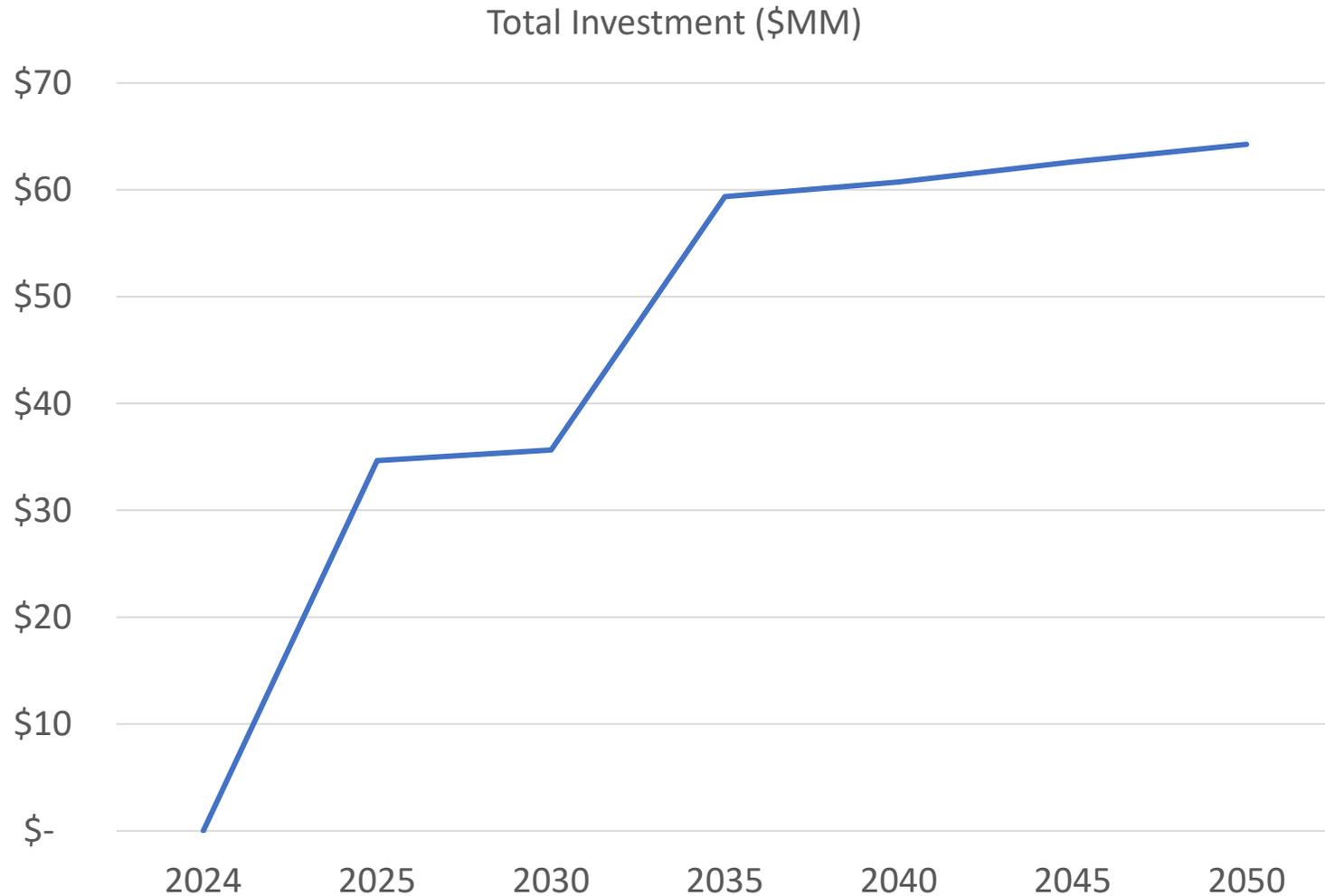


Investments in residential HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL HVAC, OREGON

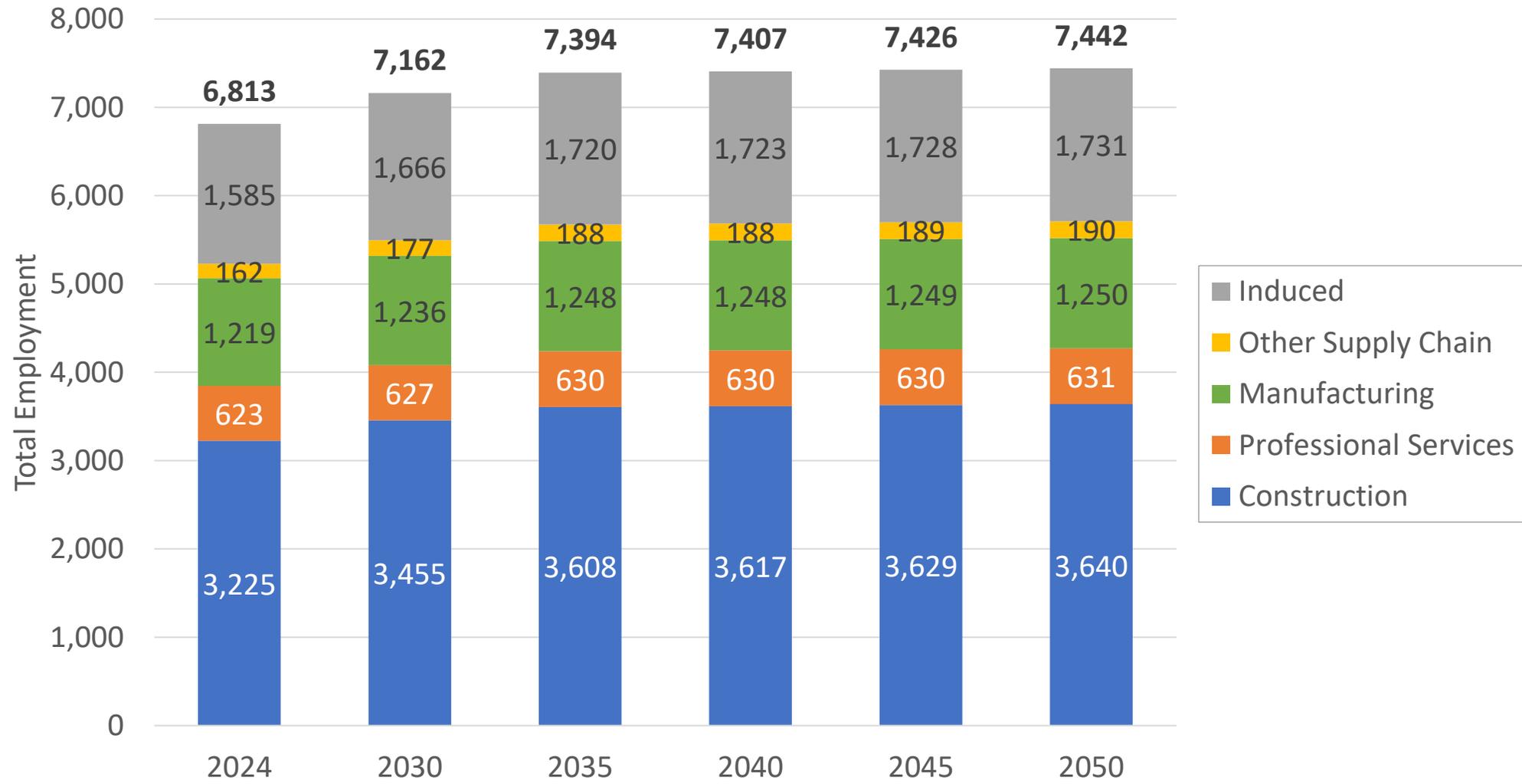


REFERENCE SCENARIO INPUTS: RESIDENTIAL SHELL, OREGON



Residential Shell investments are incremental, so the baseline for 2024 is shown at \$0. Tax credits for these retrofits roll off in 2032.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL SHELL, OREGON

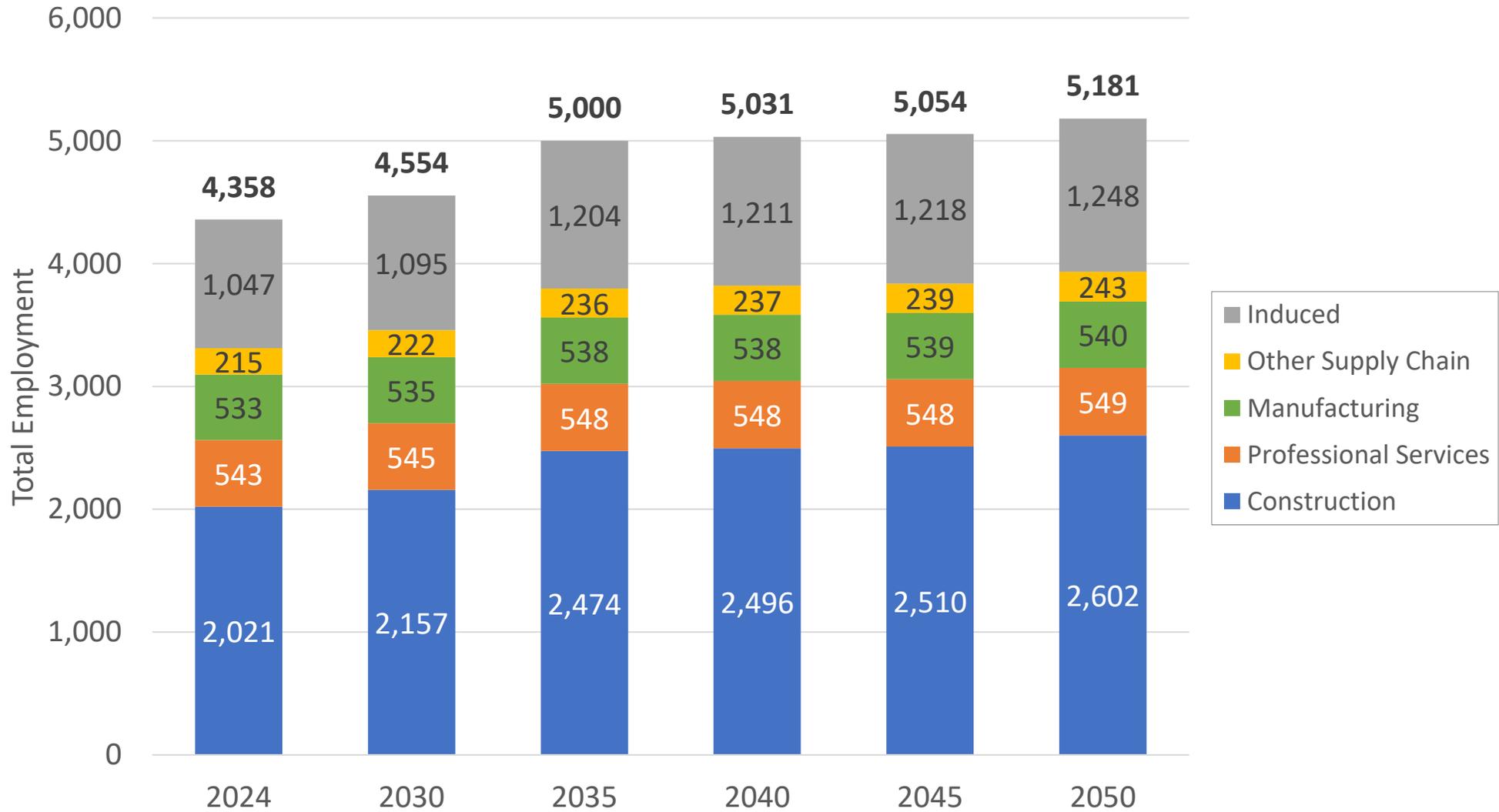


BUILDINGS: REFERENCE, EAST OREGON*

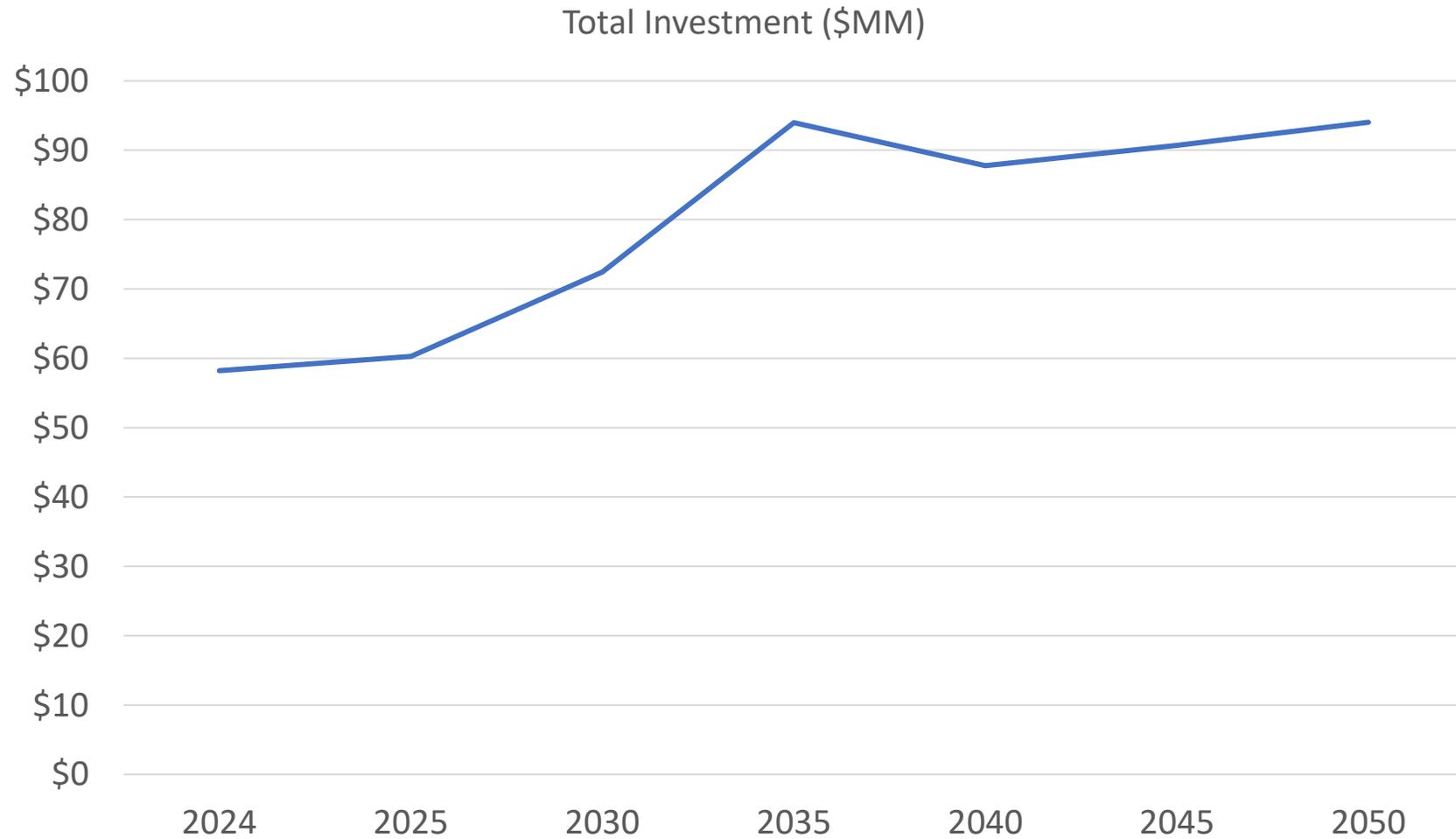
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Commercial HVAC	1,030	1,121	1,258	1,219	1,237	1,258
Residential HVAC	1,440	1,424	1,518	1,529	1,518	1,595
Residential Shell	721	759	784	786	788	789
Commercial Other	487	542	619	649	715	710
Residential Other	680	708	821	849	797	829
Buildings OVERALL	4,358	4,554	5,000	5,031	5,054	5,181
Net Change from 2024		196	642	672	696	823

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

REFERENCE SCENARIO: **BUILDINGS** – TOTALS, EAST OREGON

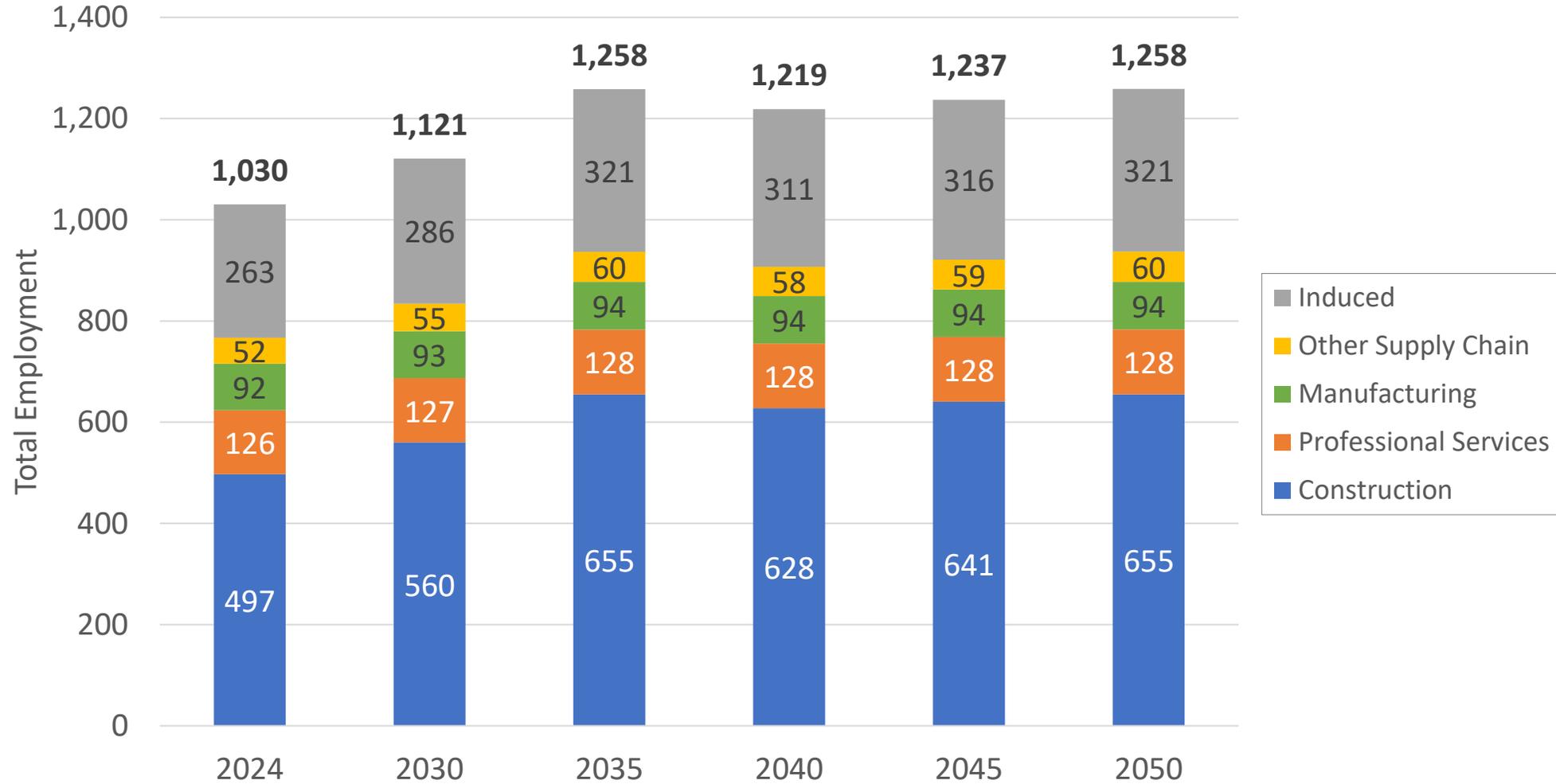


REFERENCE SCENARIO INPUTS: COMMERCIAL HVAC, EAST OREGON



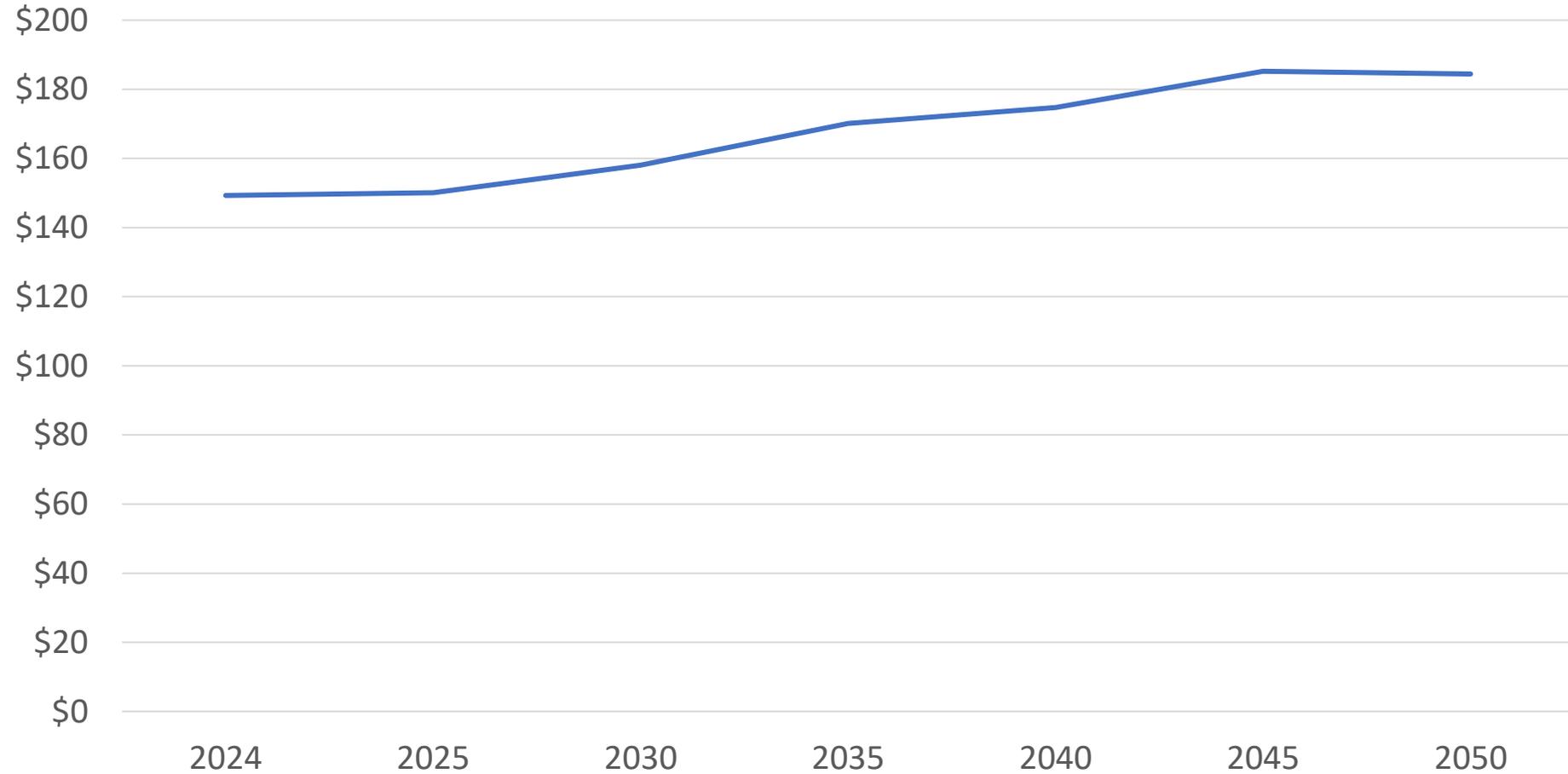
Investments in commercial HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: COMMERCIAL HVAC, EAST OREGON

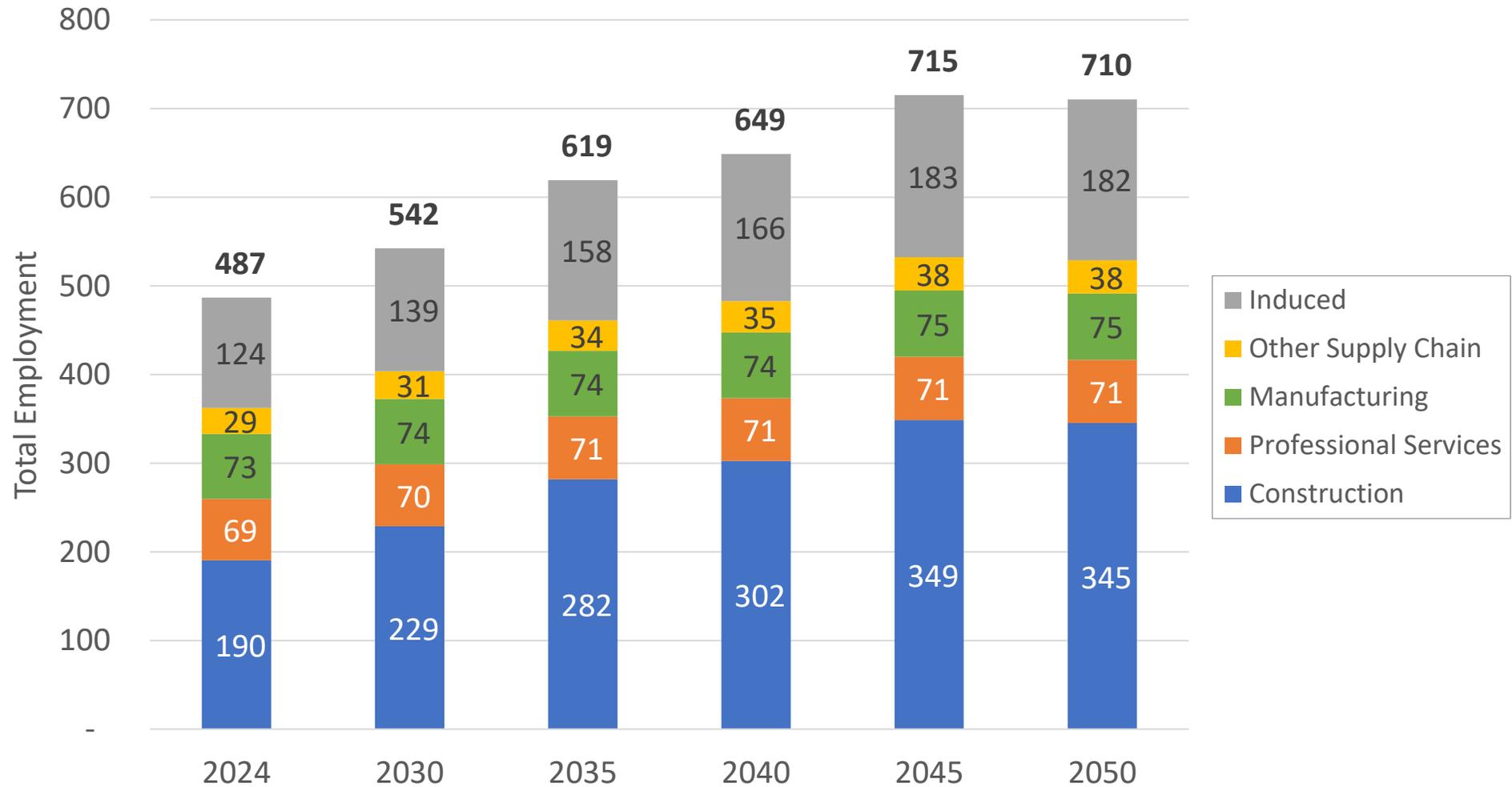


REFERENCE SCENARIO INPUTS: COMMERCIAL OTHER, EAST OREGON

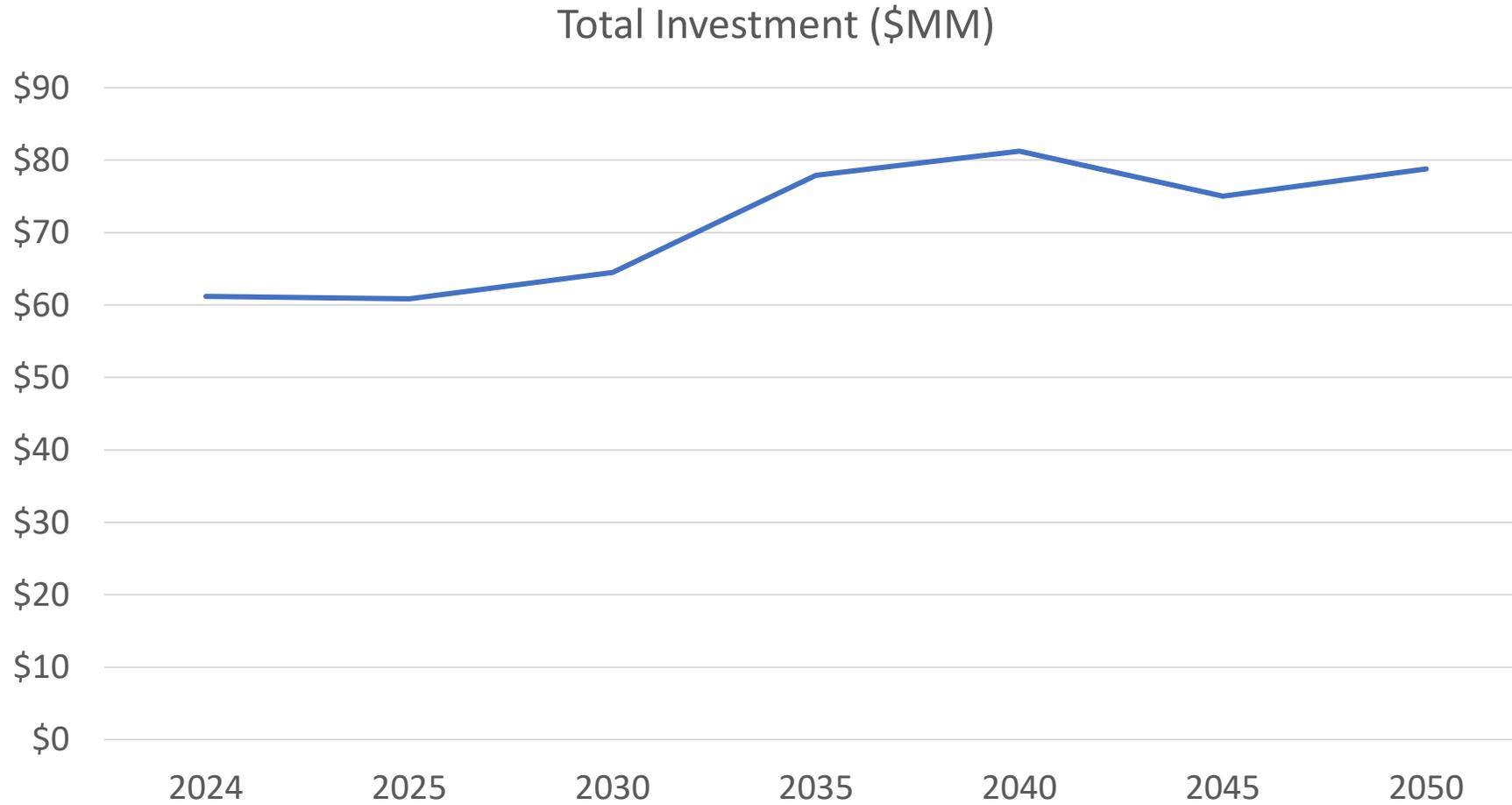
Total Investment (\$MM)



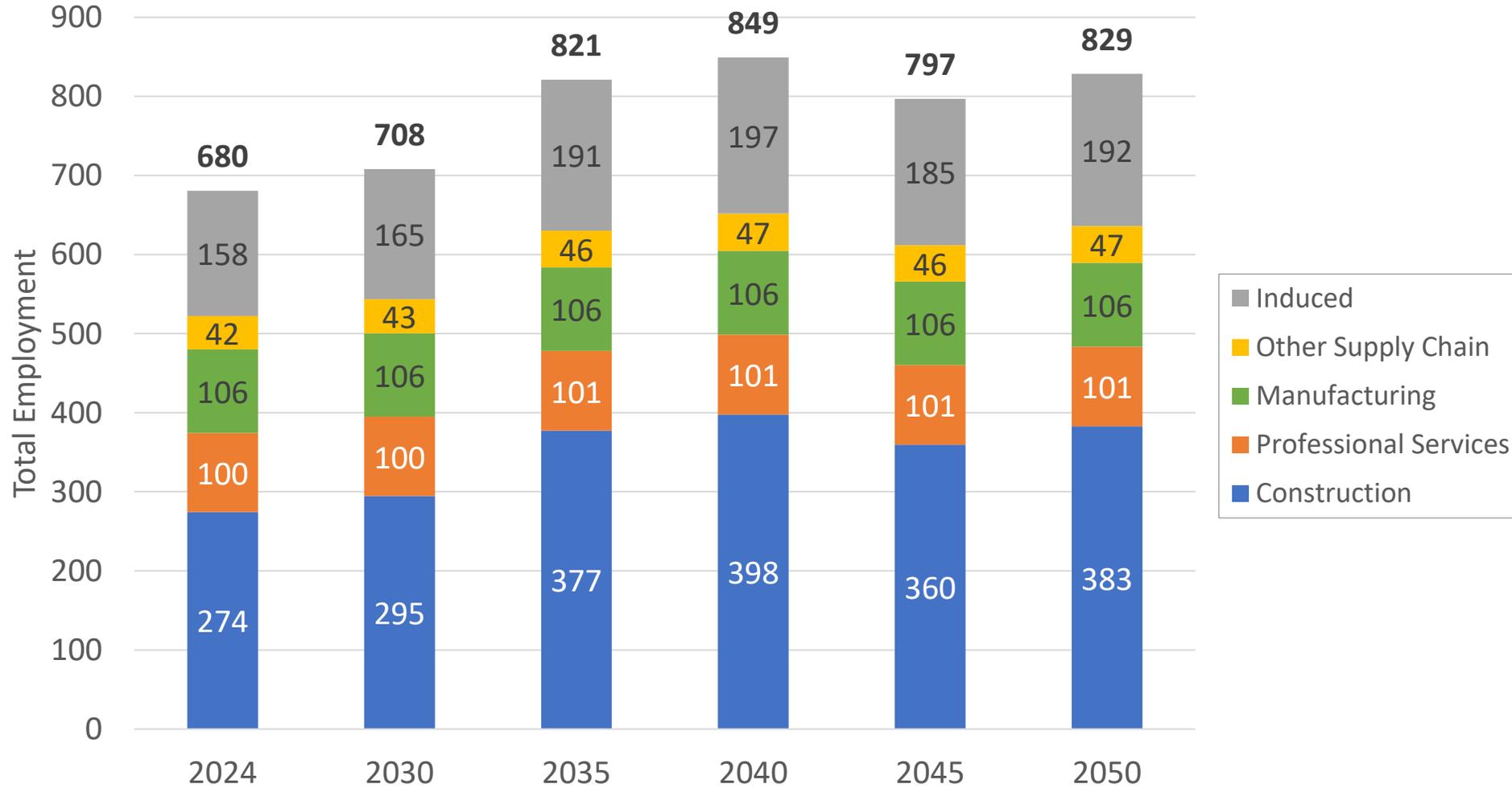
REFERENCE SCENARIO OUTPUTS: COMMERCIAL OTHER, EAST OREGON



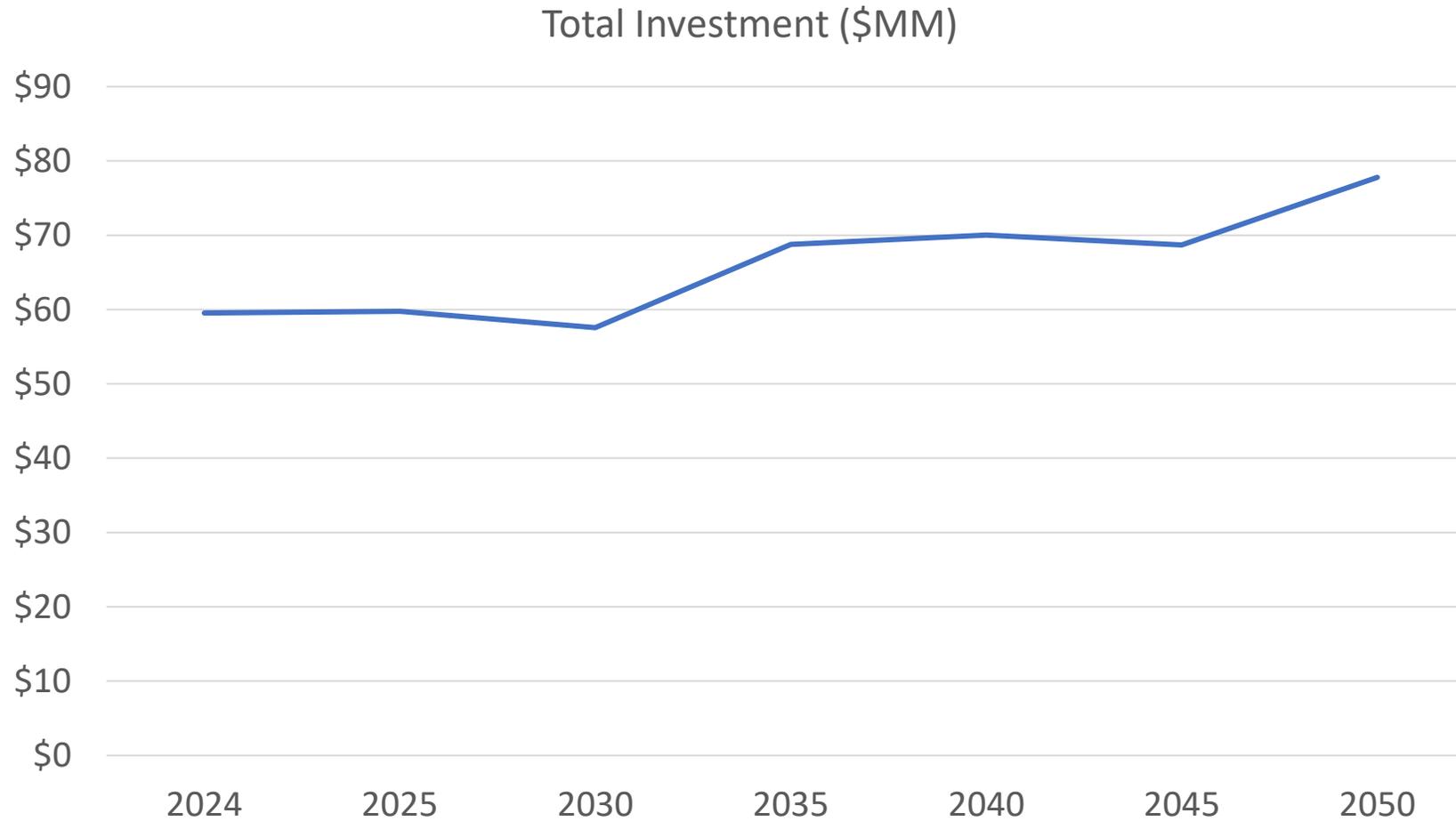
REFERENCE SCENARIO INPUTS: RESIDENTIAL OTHER, EAST OREGON



REFERENCE SCENARIO OUTPUTS: RESIDENTIAL OTHER, EAST OREGON

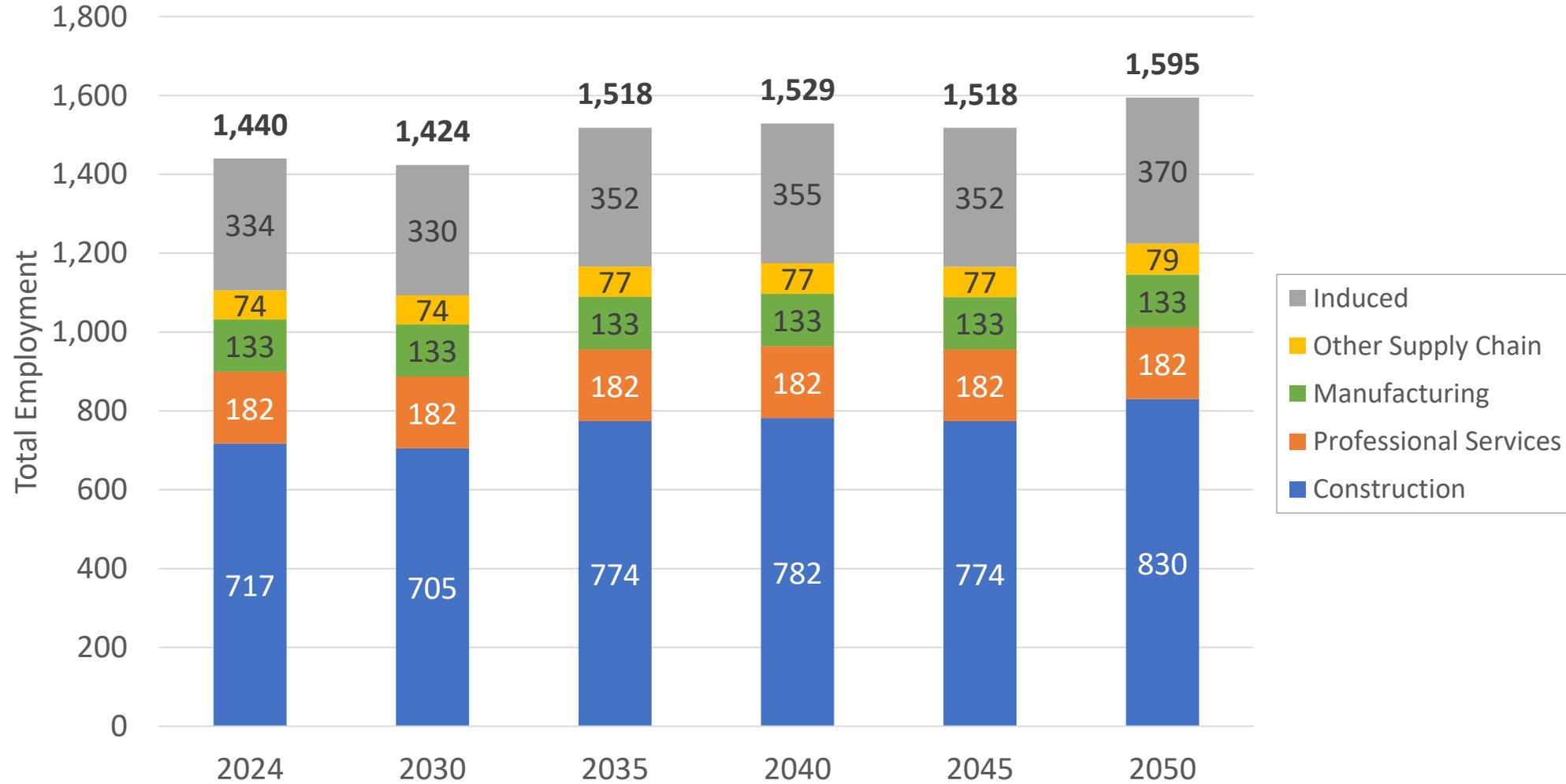


REFERENCE SCENARIO INPUTS: RESIDENTIAL HVAC, EAST OREGON

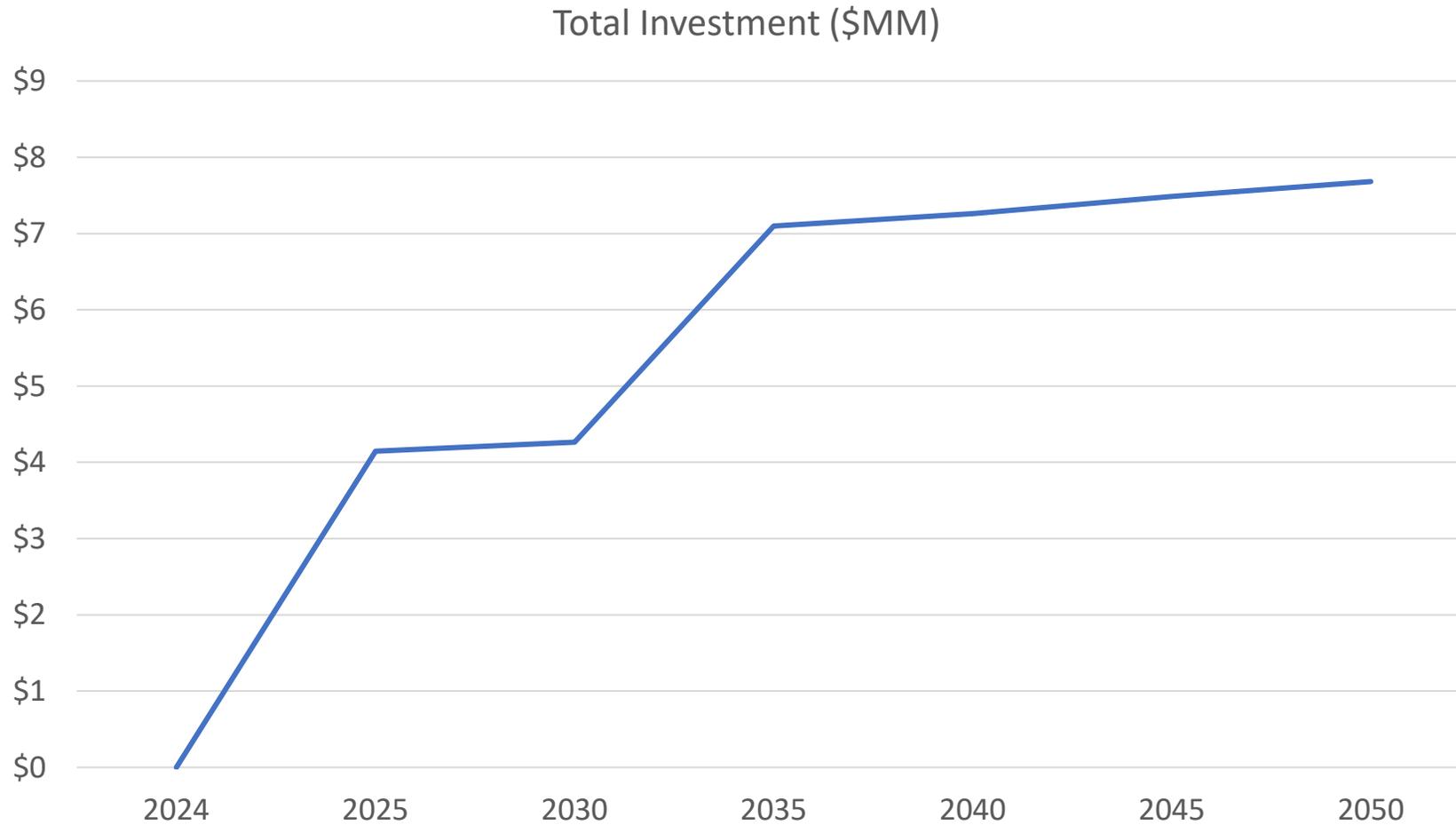


Investments in residential HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL HVAC, EAST OREGON

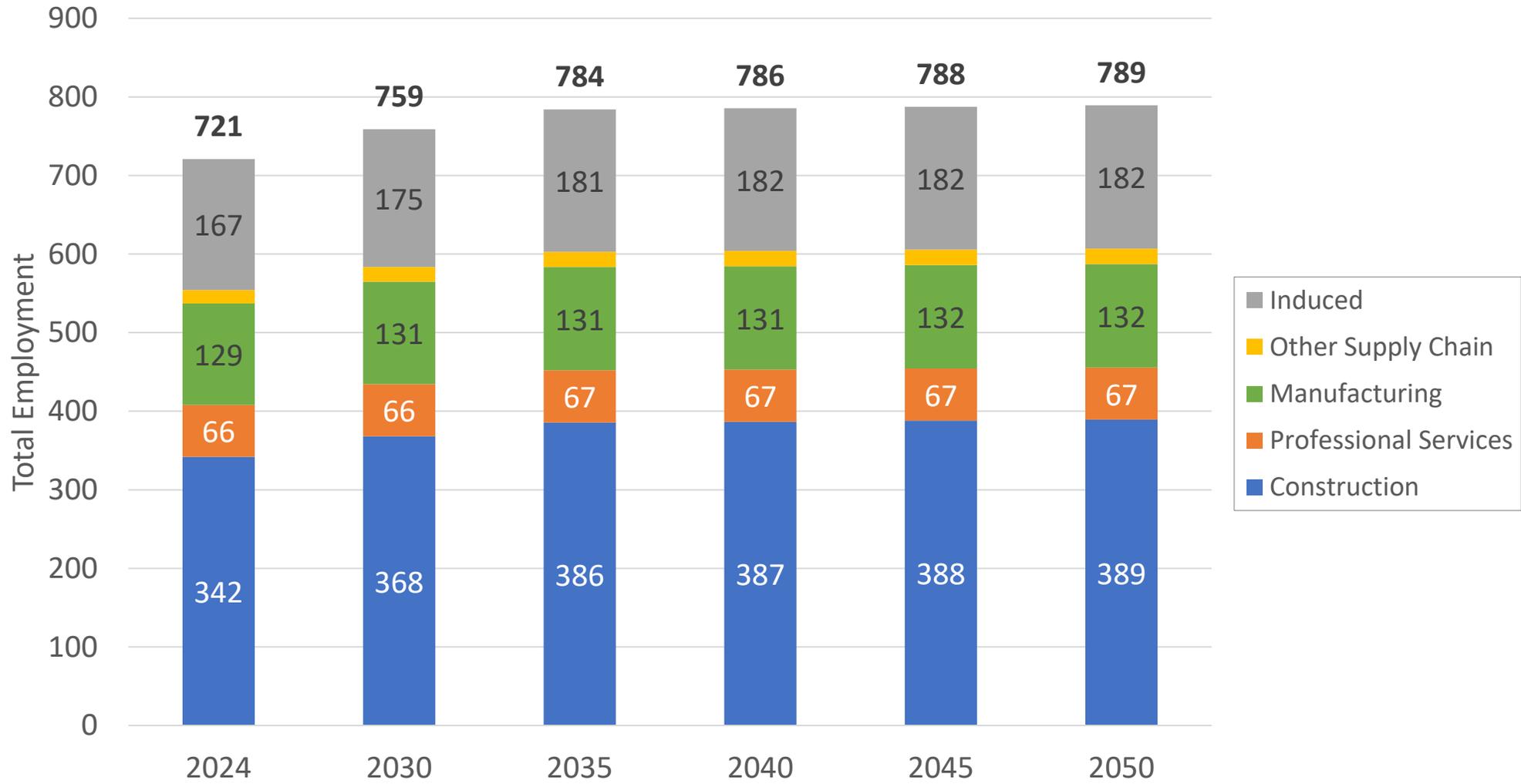


REFERENCE SCENARIO INPUTS: RESIDENTIAL SHELL, EAST OREGON



Residential Shell investments are incremental, so the baseline for 2024 is shown at \$0. Tax credits for these retrofits roll off in 2032.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL SHELL, EAST OREGON

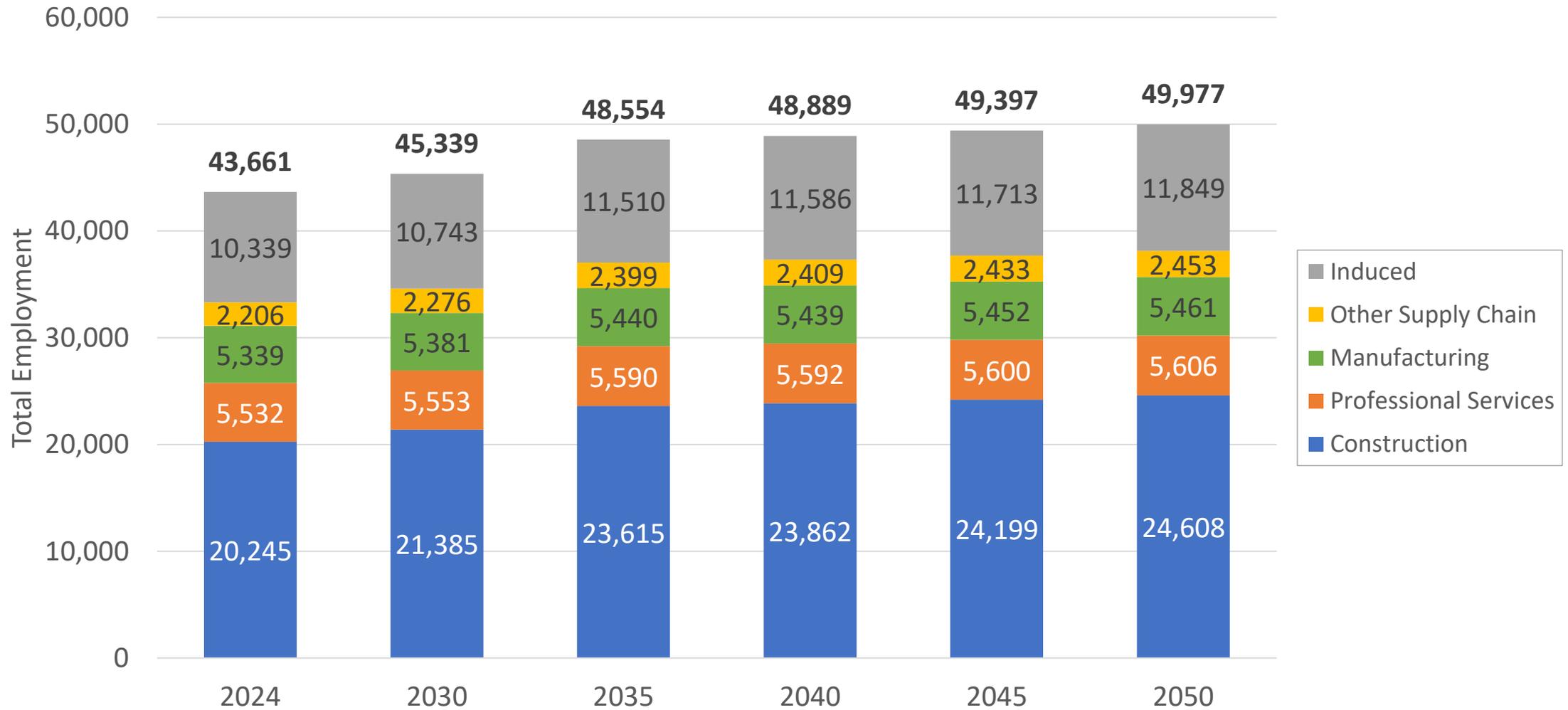


REFERENCE SCENARIO: **BUILDINGS**, WEST OREGON*

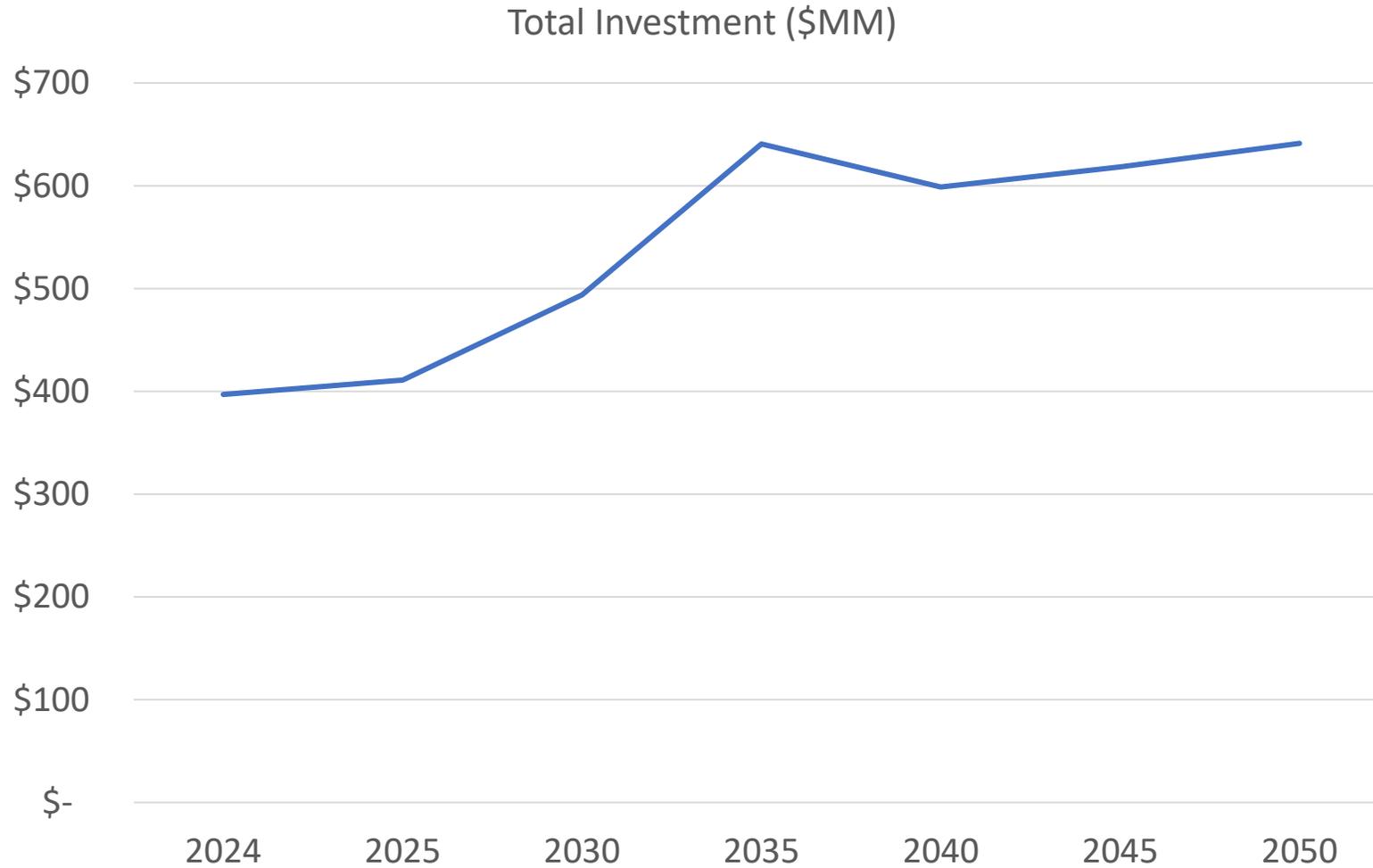
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Commercial HVAC	10,200	10,871	11,887	11,596	11,733	11,890
Residential HVAC	14,392	14,377	14,823	15,002	15,295	15,467
Residential Shell	6,092	6,403	6,610	6,622	6,638	6,652
Commercial Other	5,384	5,778	6,343	6,555	7,038	7,006
Residential Other	7,593	7,909	8,891	9,114	8,693	8,961
Buildings OVERALL	43,661	45,339	48,554	48,889	49,397	49,977
Net Change from 2024		1,678	4,893	5,228	5,737	6,316

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

REFERENCE SCENARIO: **BUILDINGS – TOTALS, WEST OREGON**

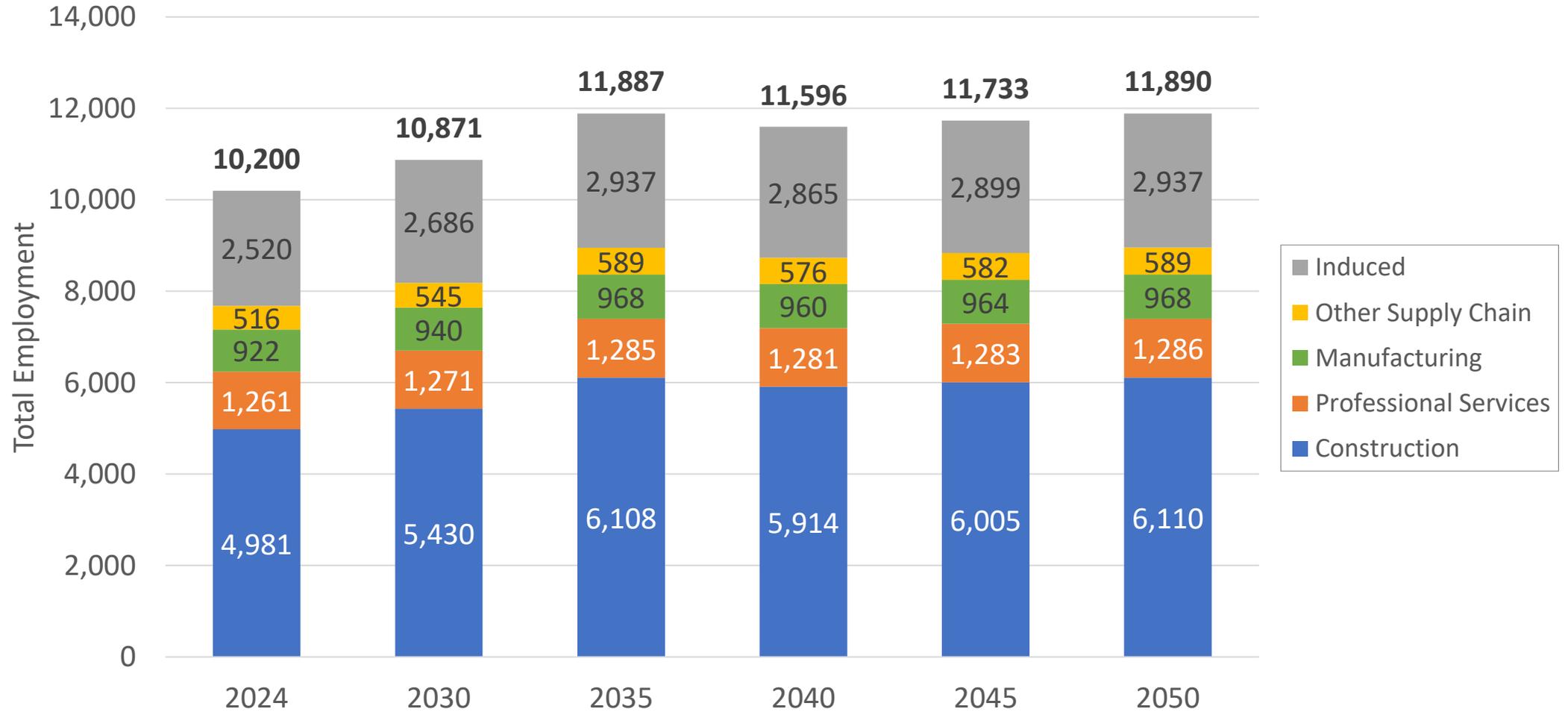


REFERENCE SCENARIO INPUTS: COMMERCIAL HVAC, WEST OREGON



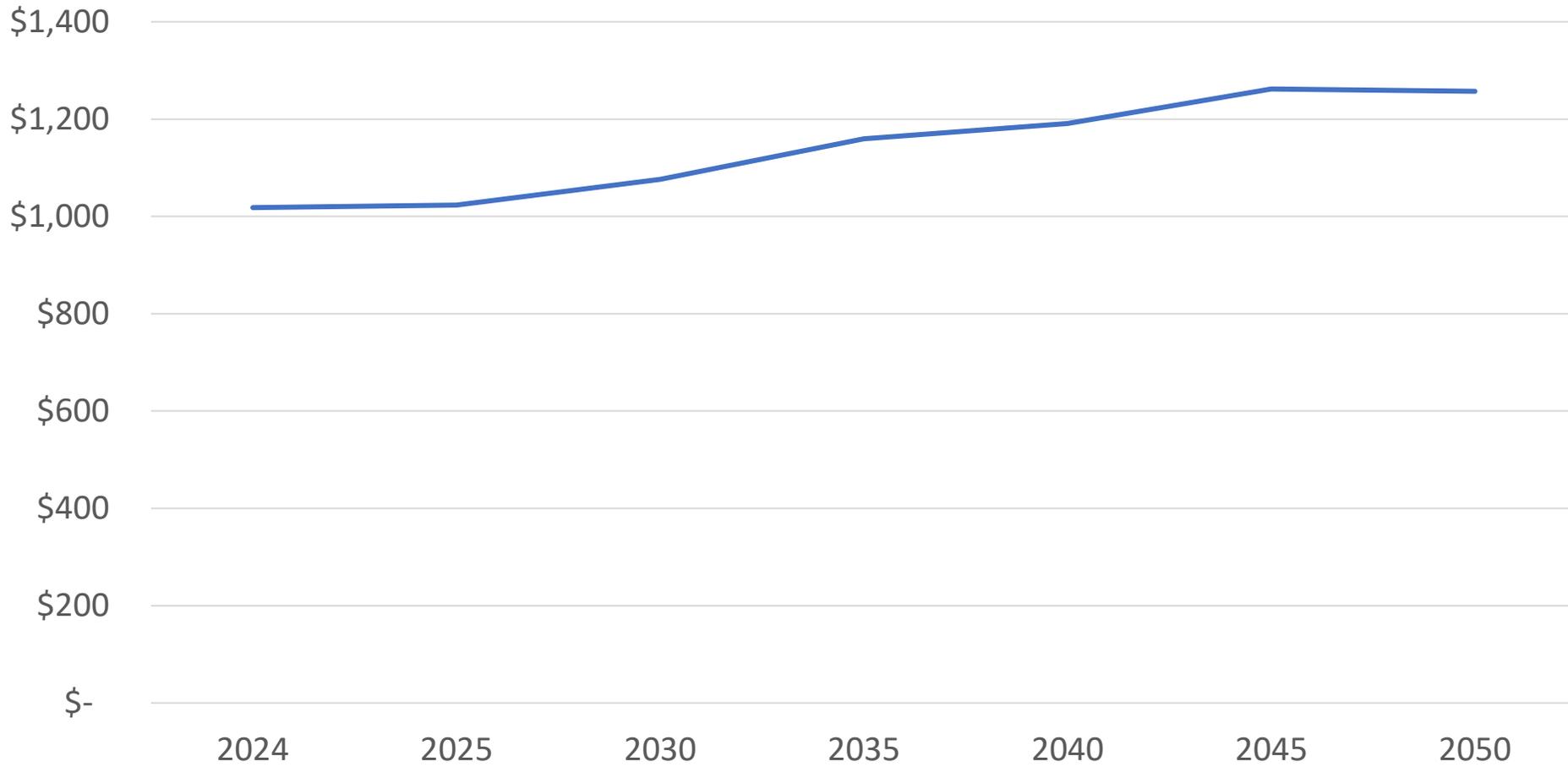
Investments in commercial HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: COMMERCIAL HVAC, WEST OREGON

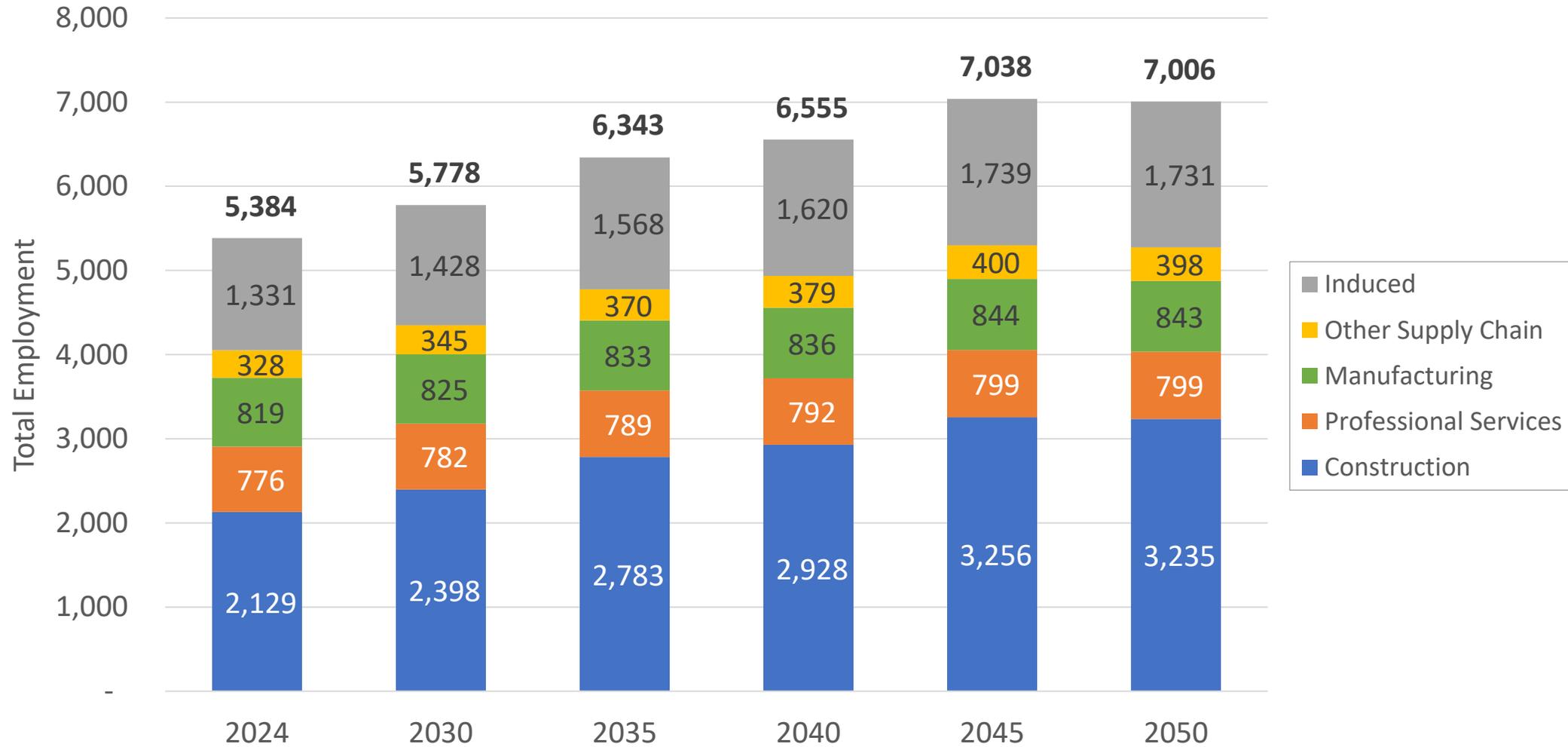


REFERENCE SCENARIO INPUTS: **COMMERCIAL OTHER**, WEST OREGON

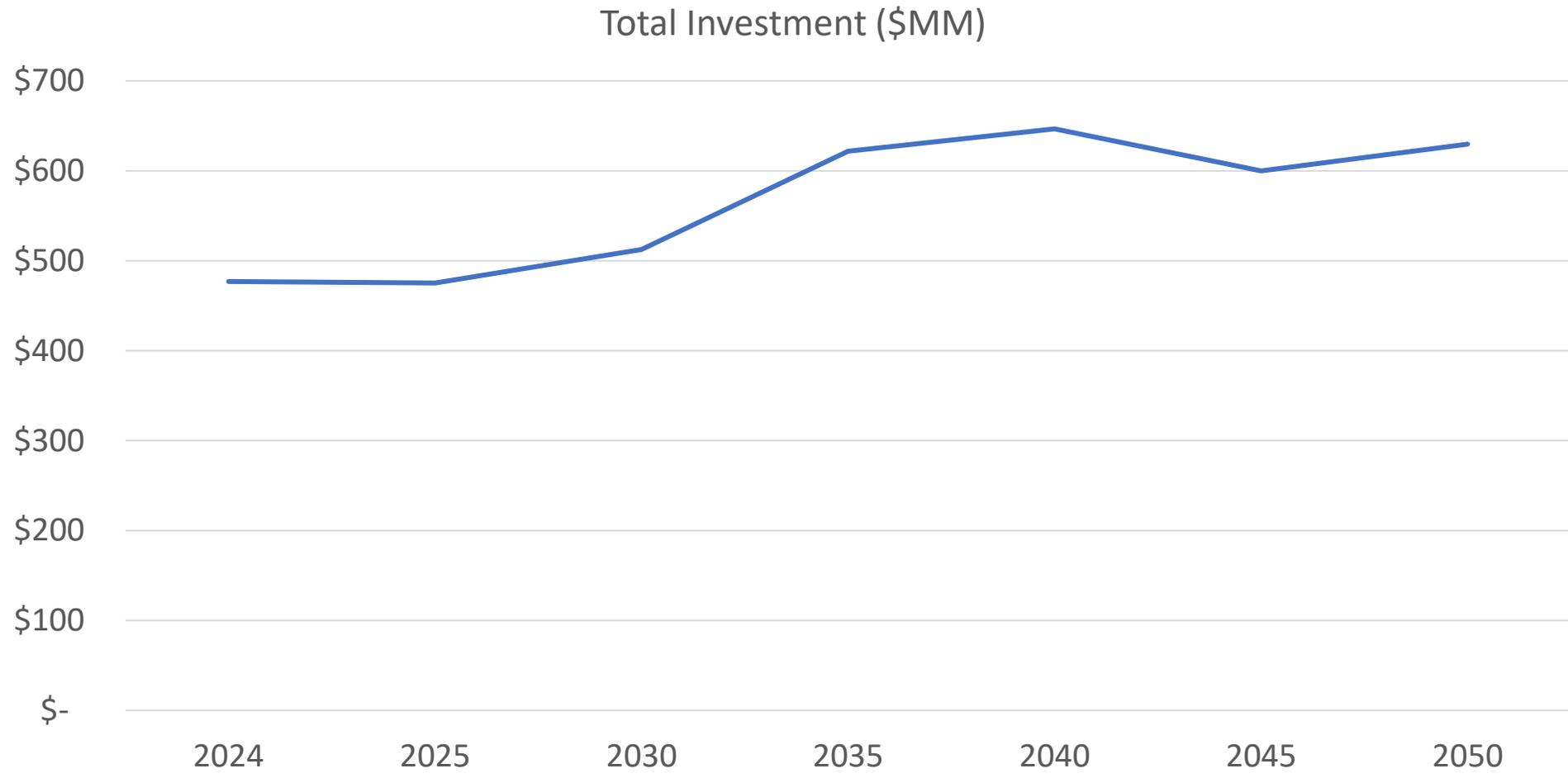
Total Investment (\$MM)



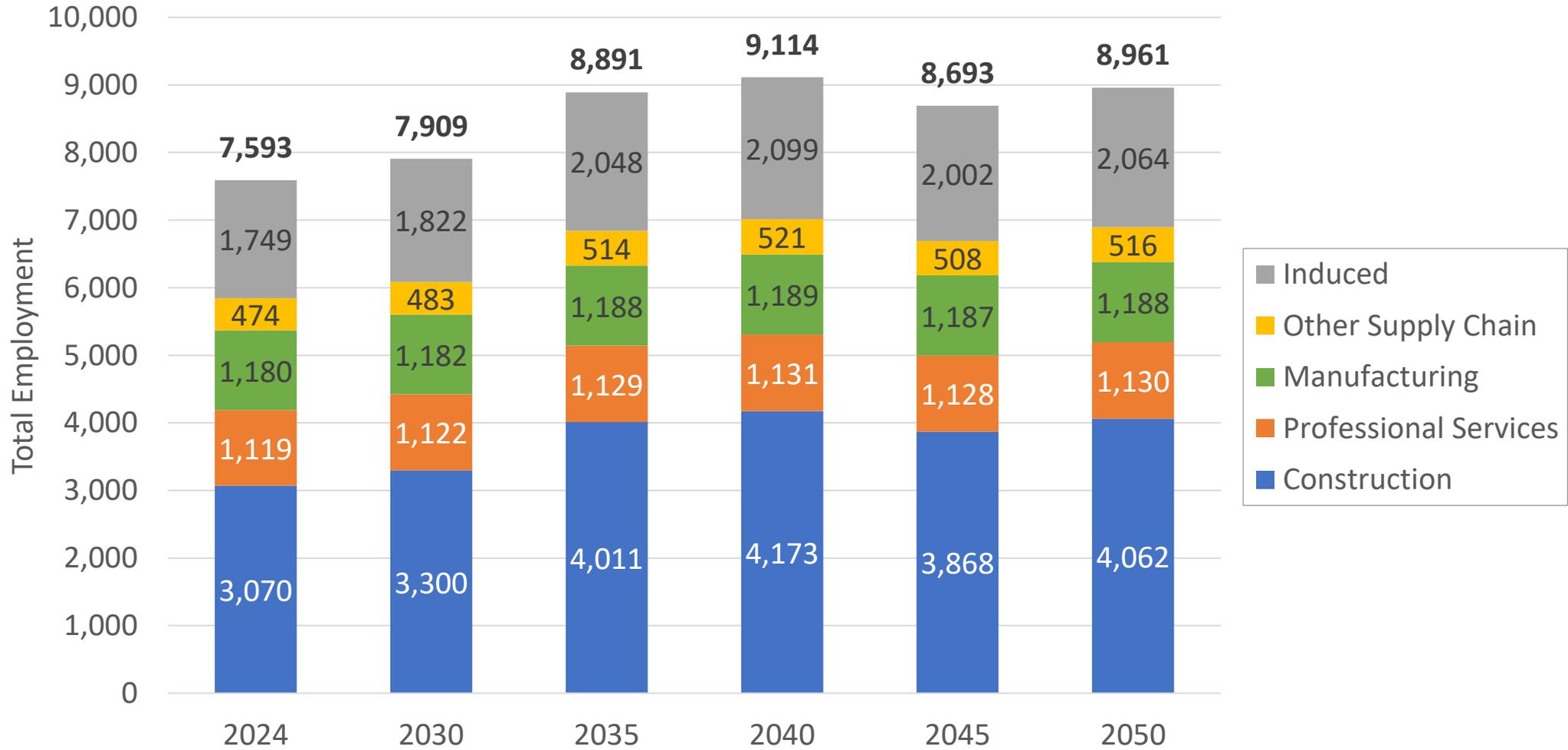
REFERENCE SCENARIO OUTPUTS: COMMERCIAL OTHER, WEST OREGON



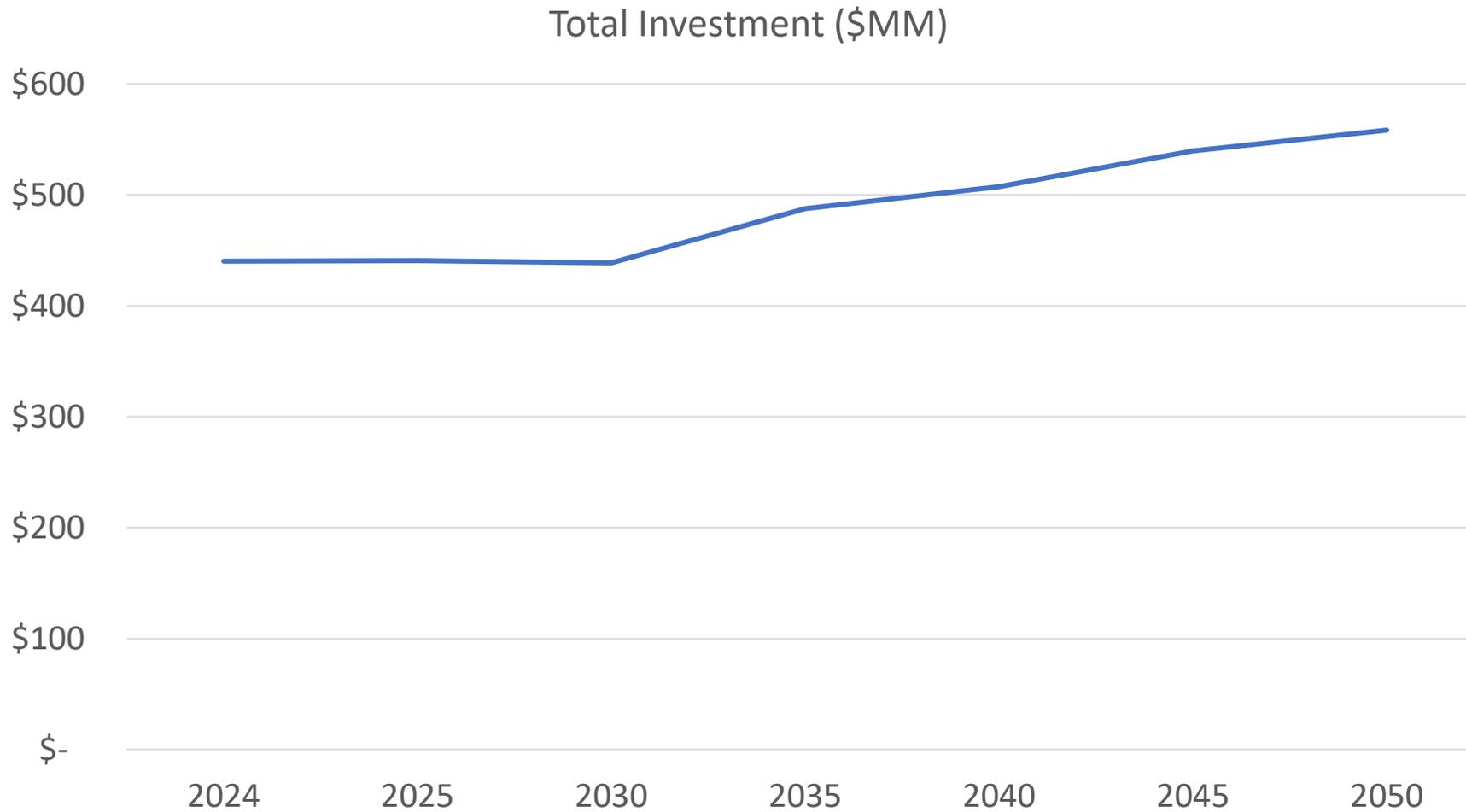
REFERENCE SCENARIO INPUTS: RESIDENTIAL OTHER, WEST OREGON



REFERENCE SCENARIO OUTPUTS: RESIDENTIAL OTHER, WEST OREGON

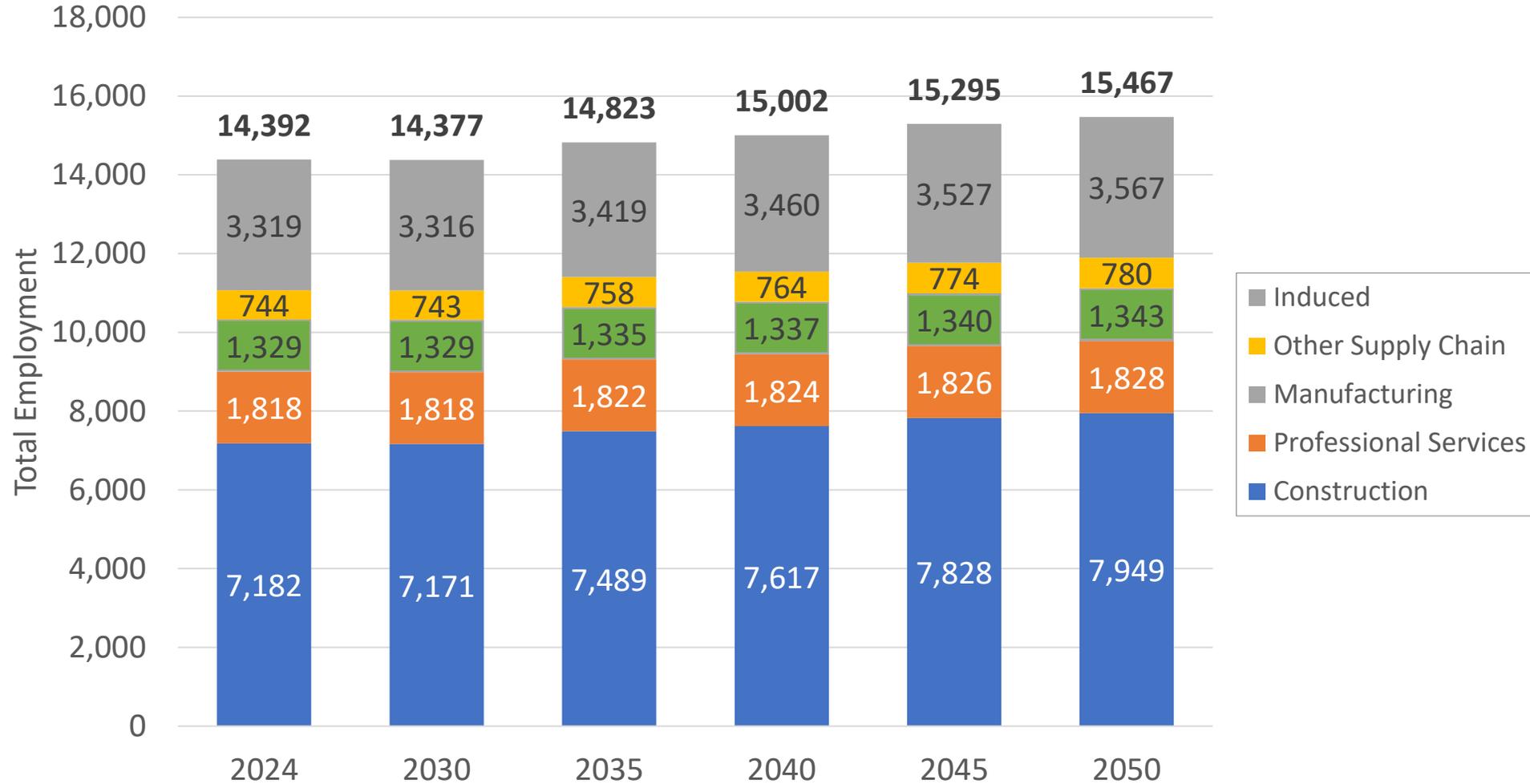


REFERENCE SCENARIO INPUTS: RESIDENTIAL HVAC, WEST OREGON



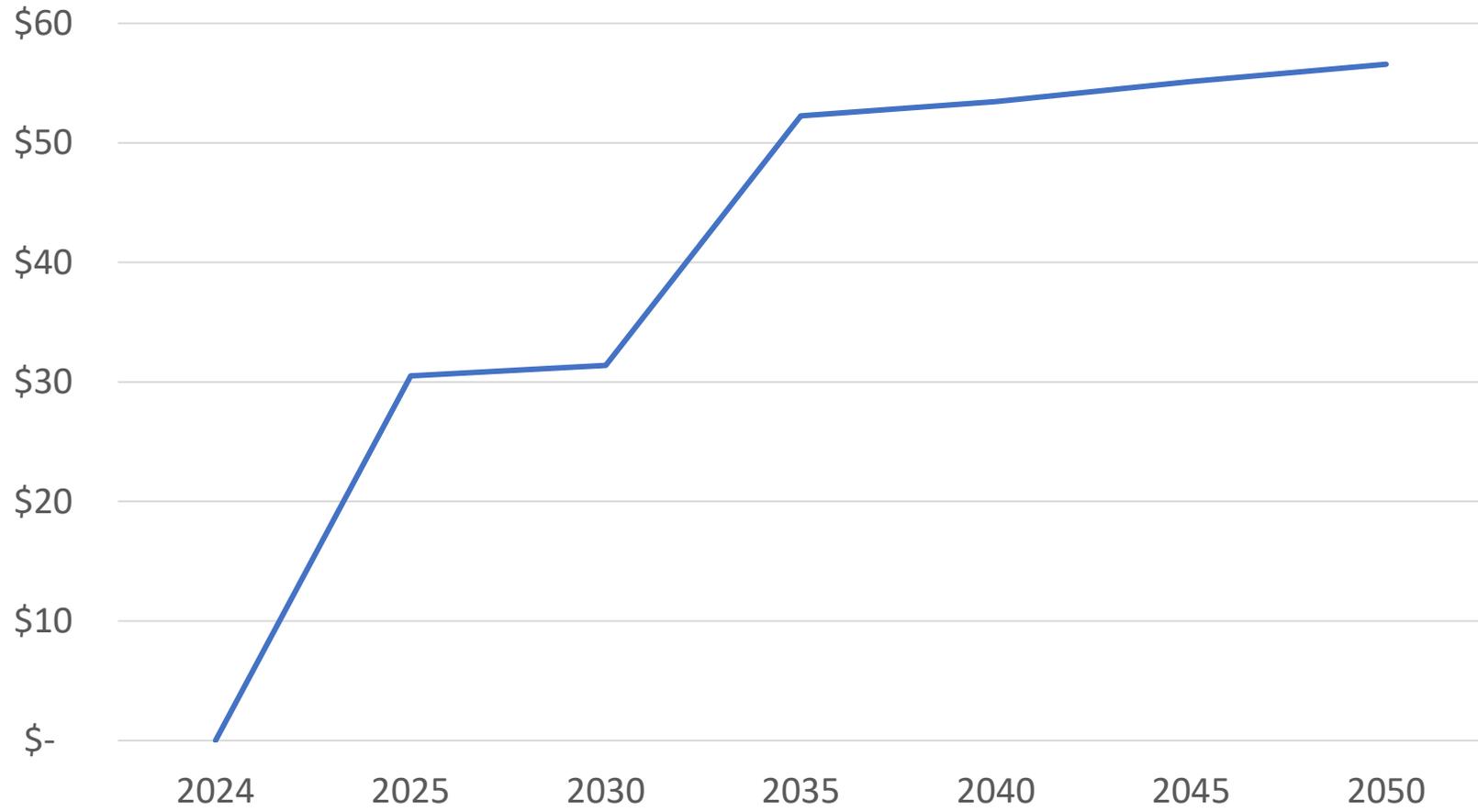
Investments in residential HVAC devices based on consumer adoption rates from EER modeling.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL HVAC, WEST OREGON



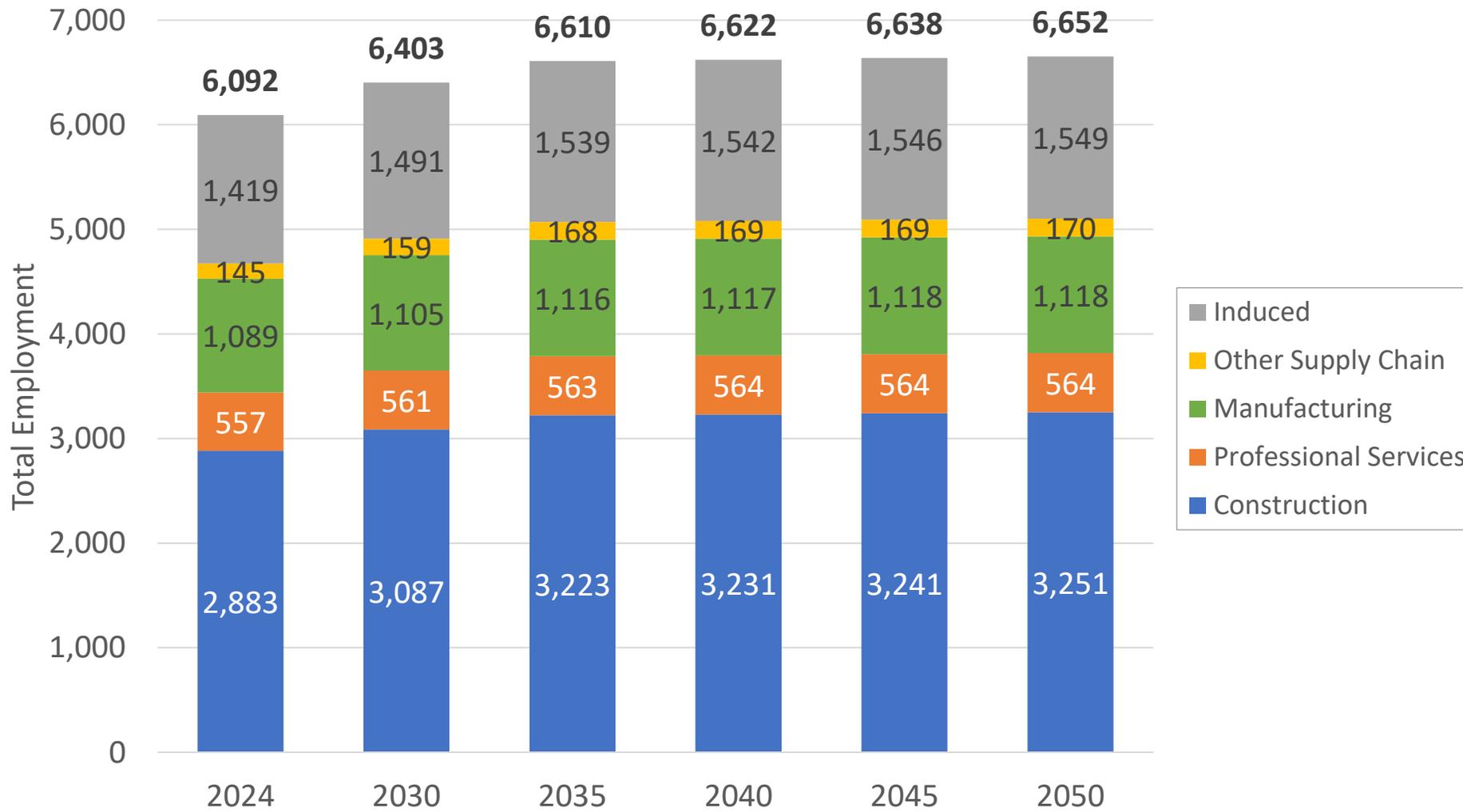
REFERENCE SCENARIO INPUTS: RESIDENTIAL SHELL, WEST OREGON

Total Investment (\$MM)



All investments are incremental, so starting investment in 2024 is \$0. Tax credits for these retrofits roll off in 2032.

REFERENCE SCENARIO OUTPUTS: RESIDENTIAL SHELL, WEST OREGON



**Part 3:
Initial
Employment
Outputs**

Transportation

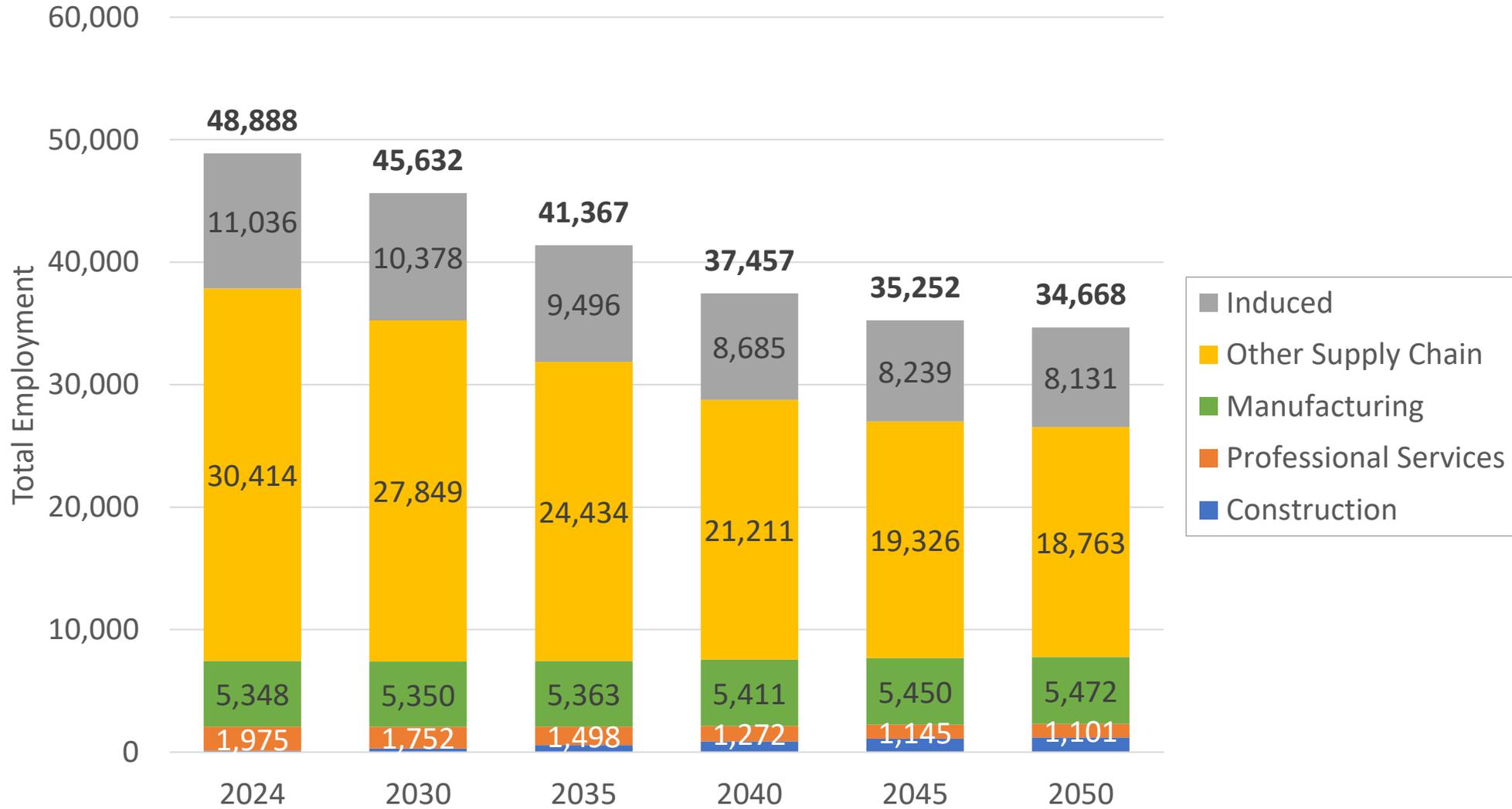
III. Transportation

- 1. Charging Stations**
- 2. Fueling Stations**
- 3. Vehicle Maintenance**
- 4. Vehicle Manufacturing**
- 5. Wholesale Trade Parts**

TRANSPORTATION: REFERENCE, OREGON

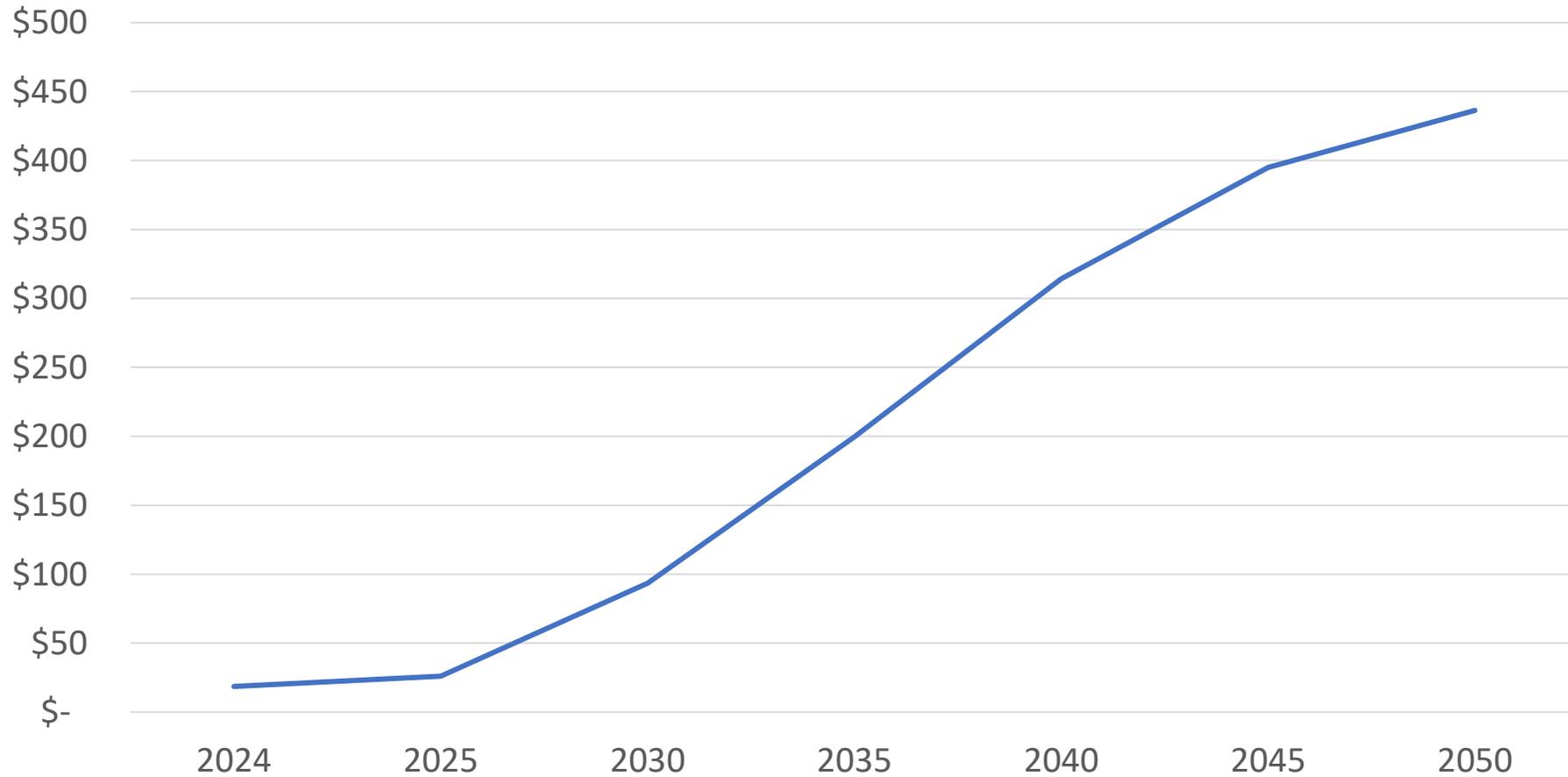
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Charging Stations	76	388	838	1,329	1,675	1,852
Vehicle Manufacturing	7,300	7,300	7,311	7,364	7,417	7,443
Wholesale Trade Parts	7,429	7,770	7,969	8,196	8,475	8,762
Sub-total	14,804	15,459	16,119	16,889	17,568	18,057
Change		654	1,315	2,085	2,763	3,252
Displacement Sub-Sectors						
Fueling Stations	17,003	14,094	10,933	8,136	6,531	5,876
Vehicle Maintenance	17,080	16,080	14,316	12,432	11,154	10,736
Sub-total	34,083	30,174	25,248	20,568	17,684	16,612
Change		-3,910	-8,835	-13,515	-16,399	-17,471
Transportation OVERALL	48,888	45,632	41,367	37,457	35,252	34,668
Net Change from 2024		-3,256	-7,520	-11,430	-13,635	-14,219

REFERENCE SCENARIO: TRANSPORTATION – TOTALS, OREGON

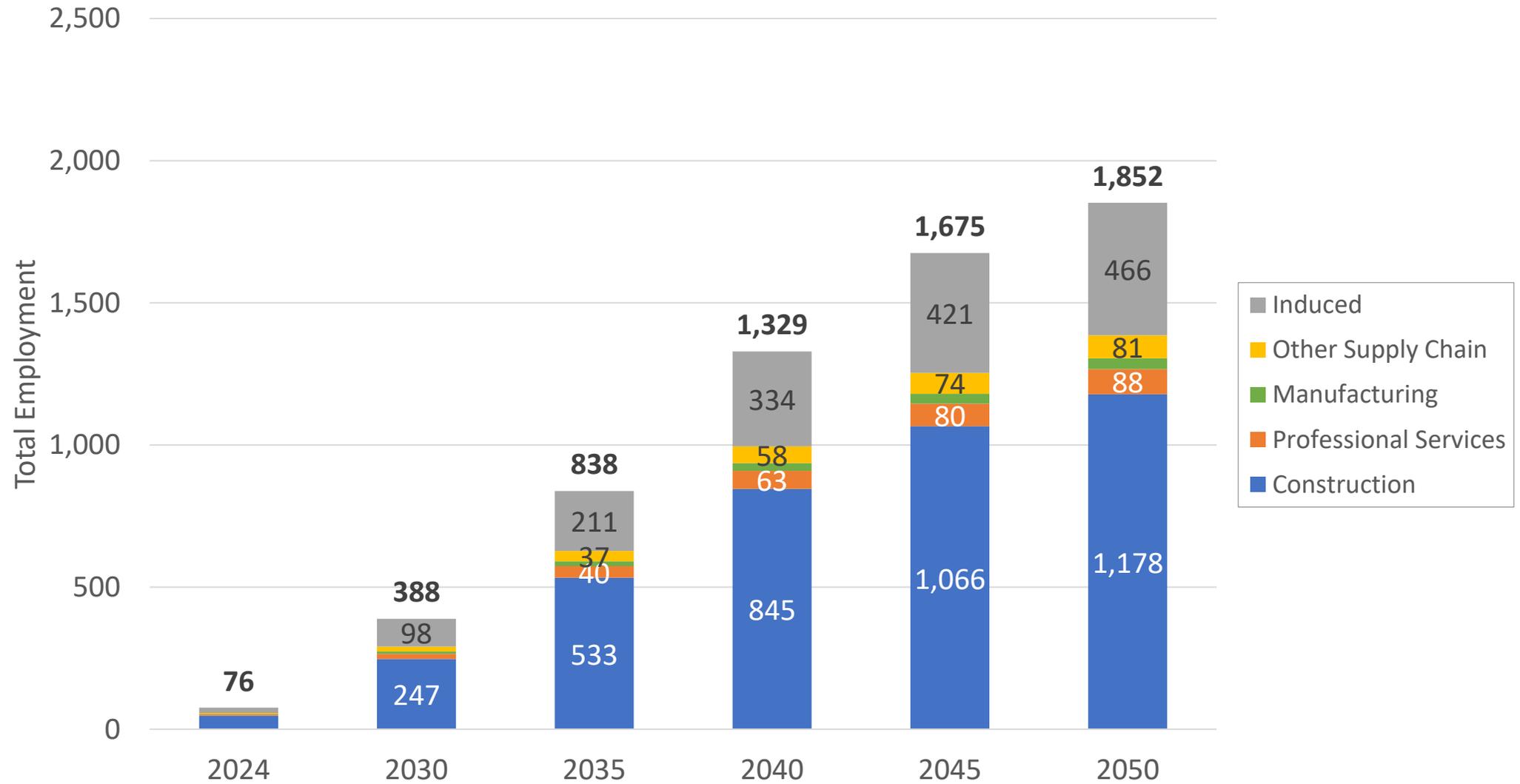


REFERENCE SCENARIO INPUTS: CHARGING STATIONS, OREGON

Total Investment (\$MM)

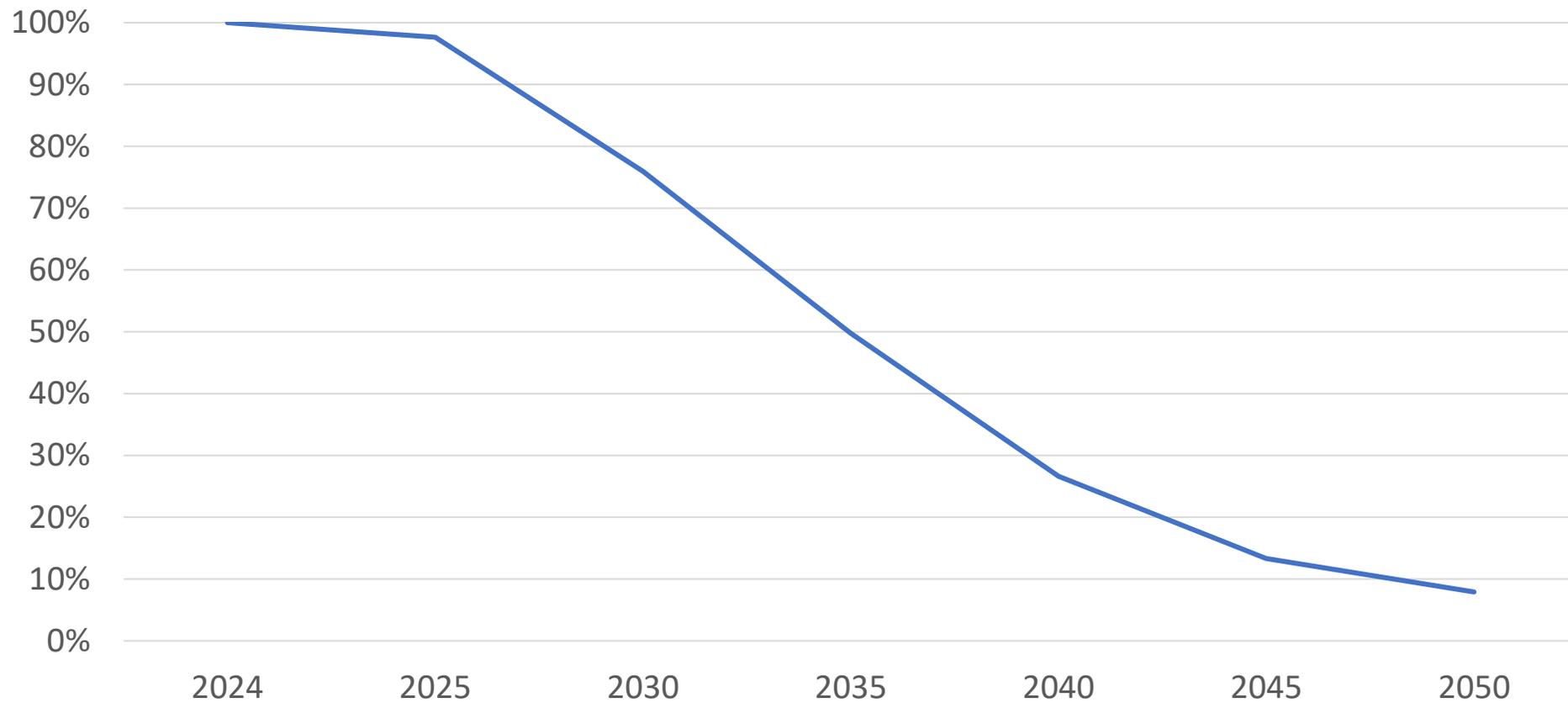


REFERENCE SCENARIO OUTPUTS: CHARGING STATIONS, OREGON

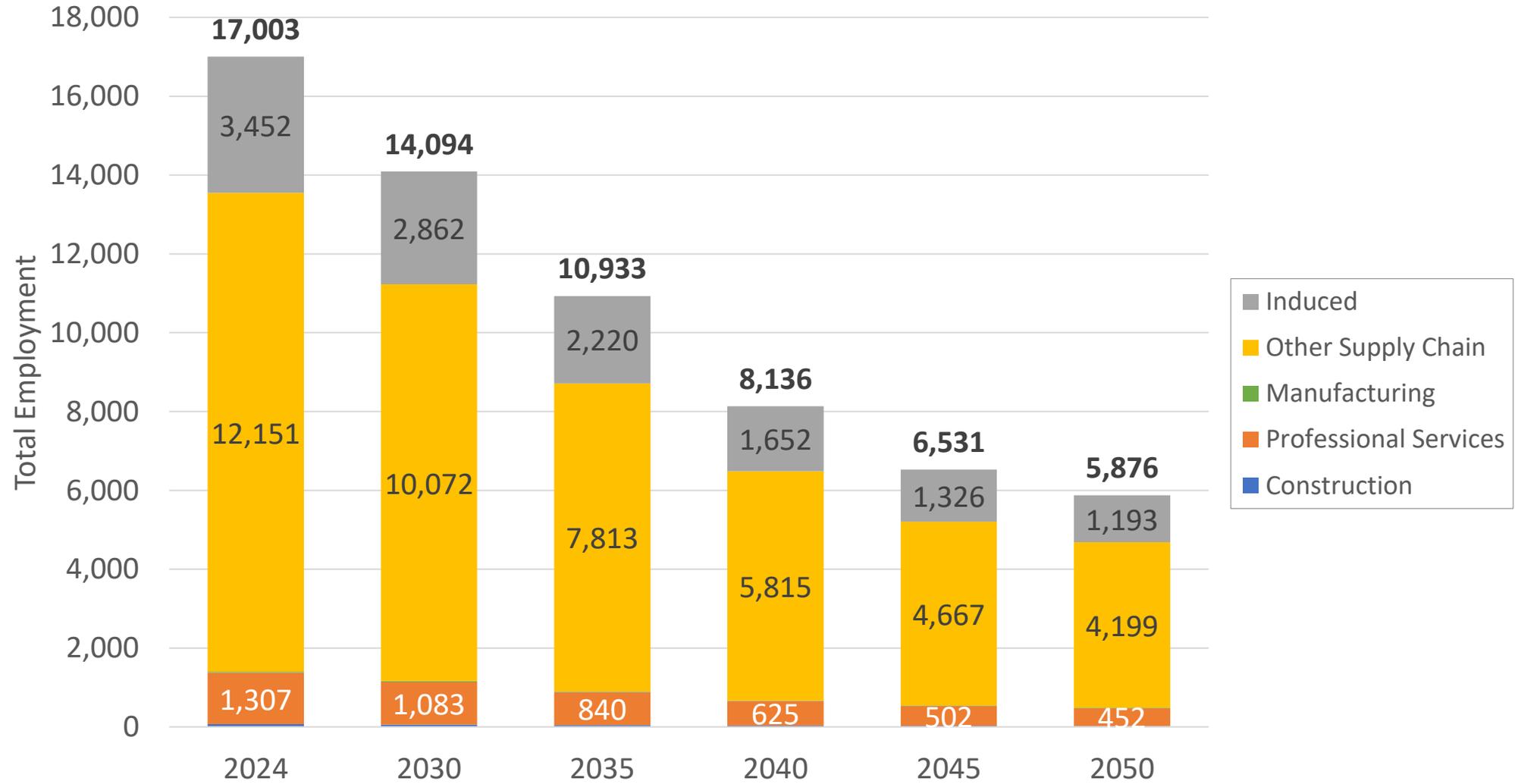


REFERENCE SCENARIO INPUTS: FUELING STATIONS, OREGON

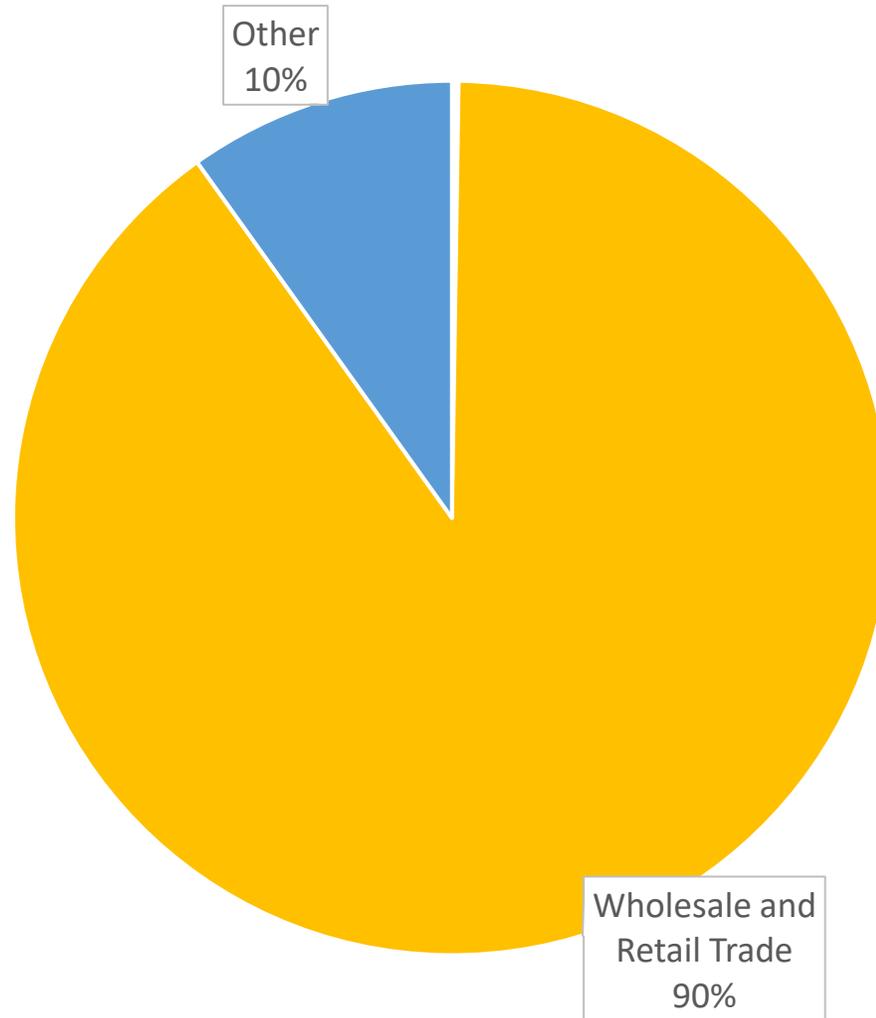
Fuel Demand Relative to 2024



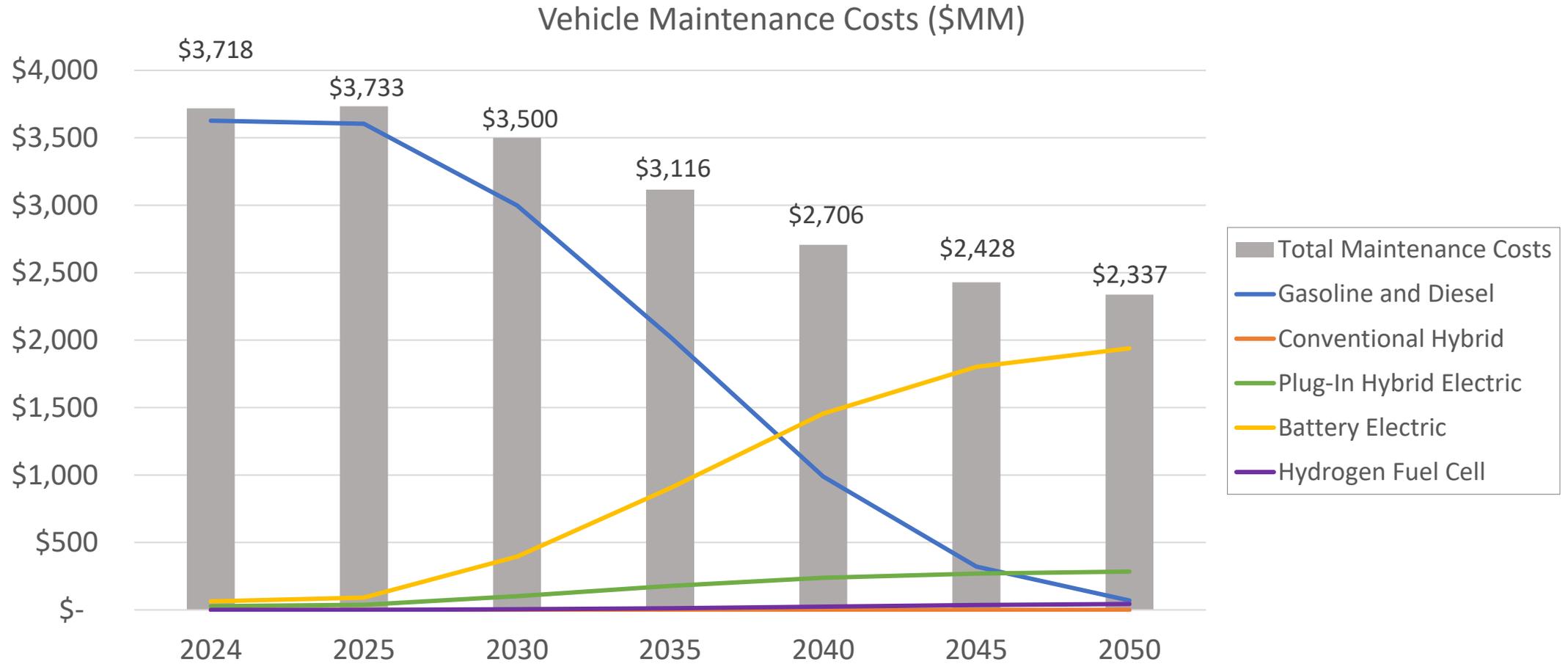
REFERENCE SCENARIO OUTPUTS: FUELING STATIONS, OREGON



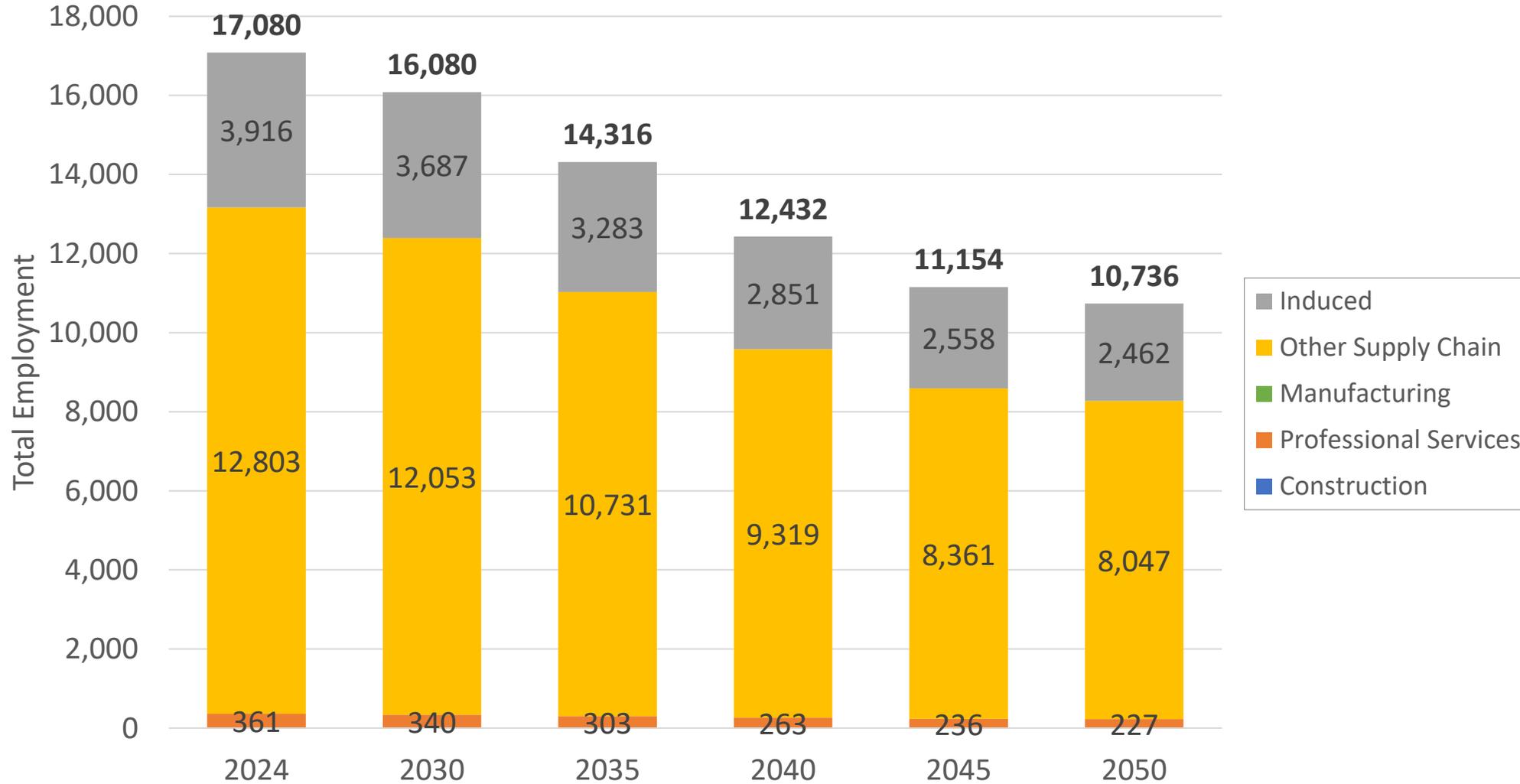
OTHER SUPPLY CHAIN BREAKOUT: **FUELING STATIONS**, OREGON



REFERENCE SCENARIO INPUTS: VEHICLE MAINTENANCE, OREGON

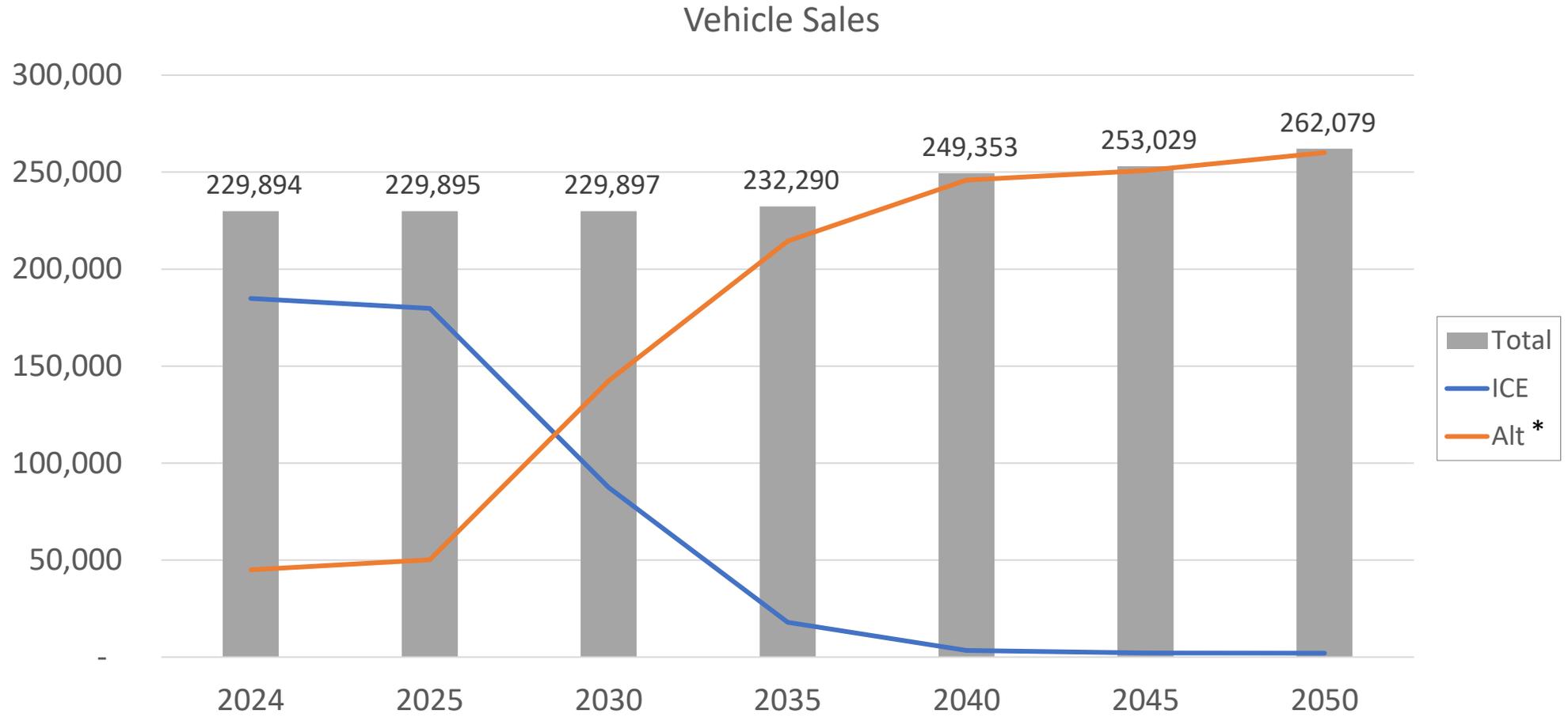


REFERENCE SCENARIO OUTPUTS: VEHICLE MAINTENANCE, OREGON



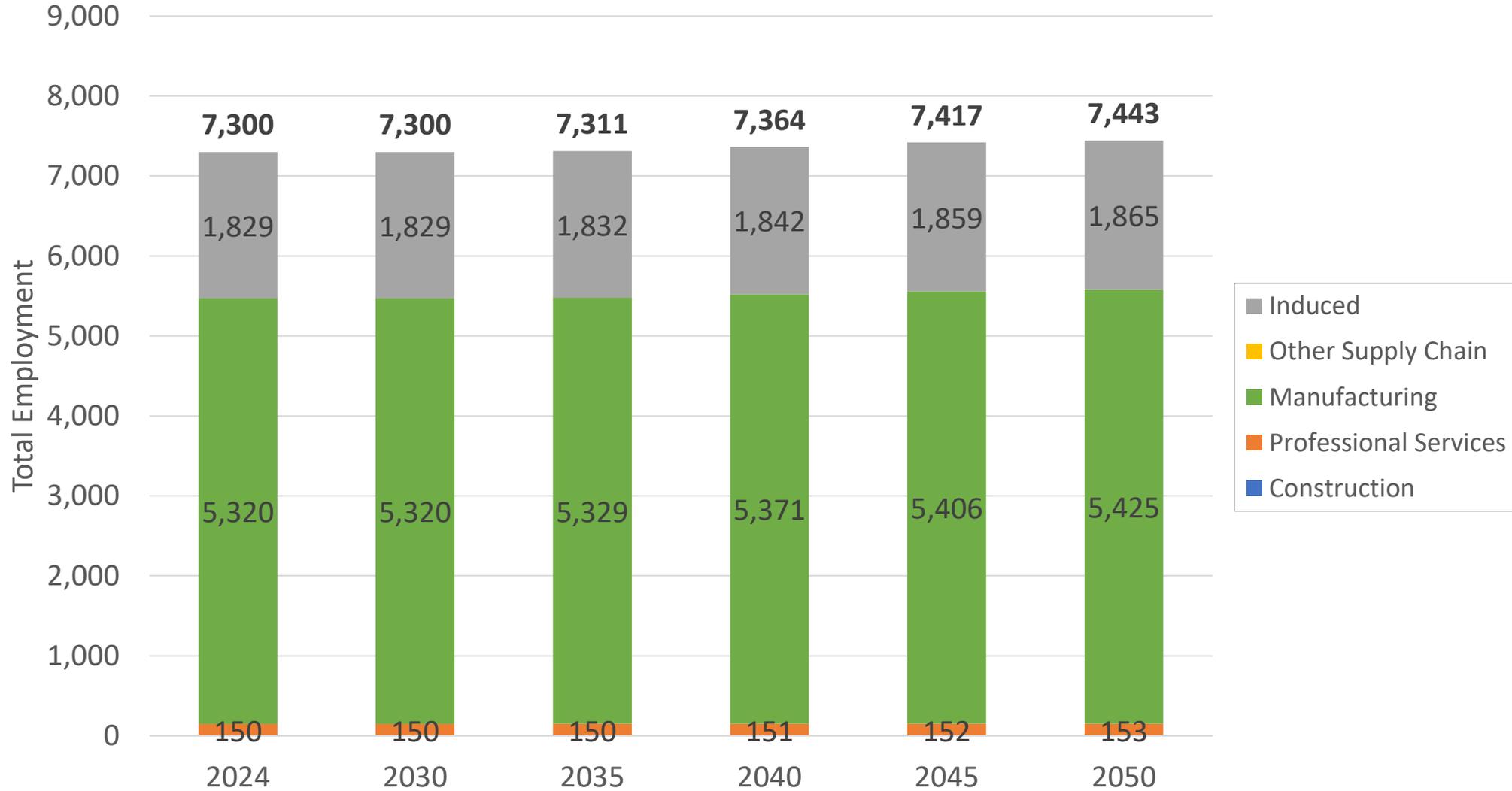
Note: Other Supply Chain employment is composed entirely of employment in the Automotive Repair and Maintenance industry

REFERENCE SCENARIO INPUTS: VEHICLE MANUFACTURING, OREGON



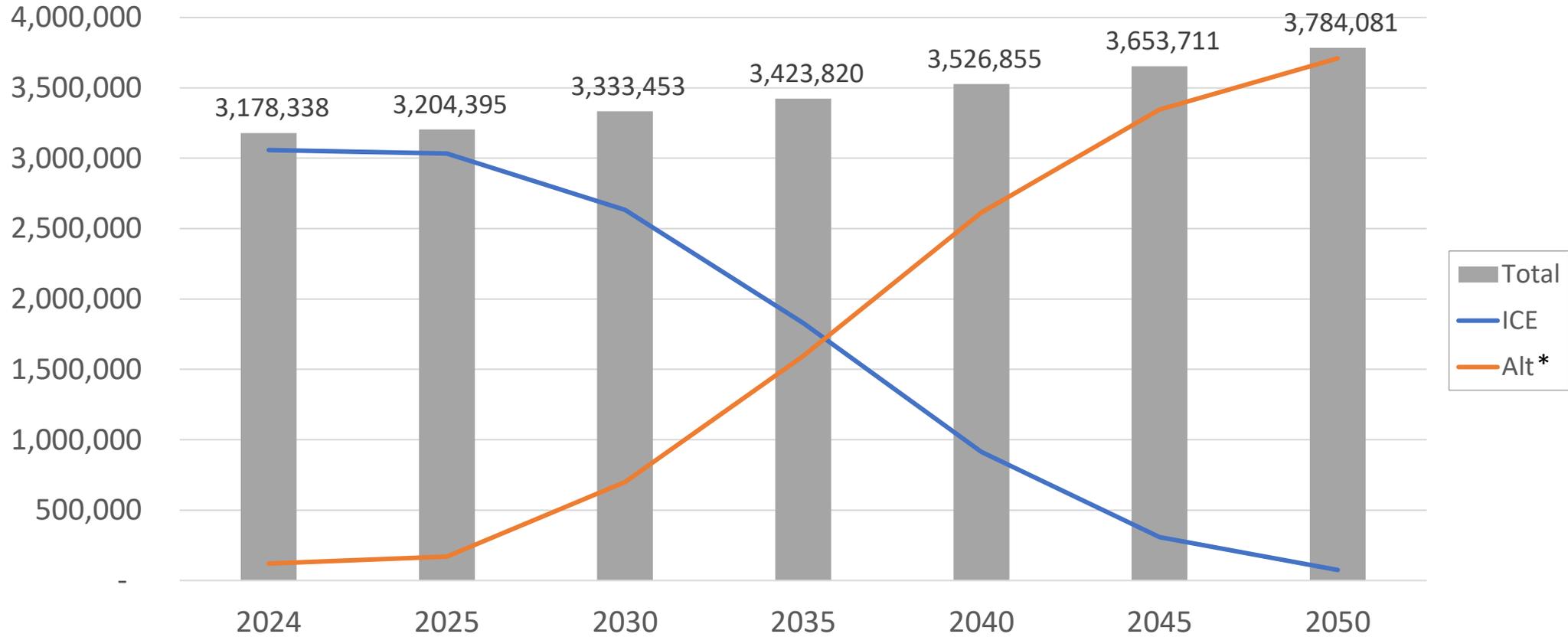
* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: VEHICLE MANUFACTURING, OREGON



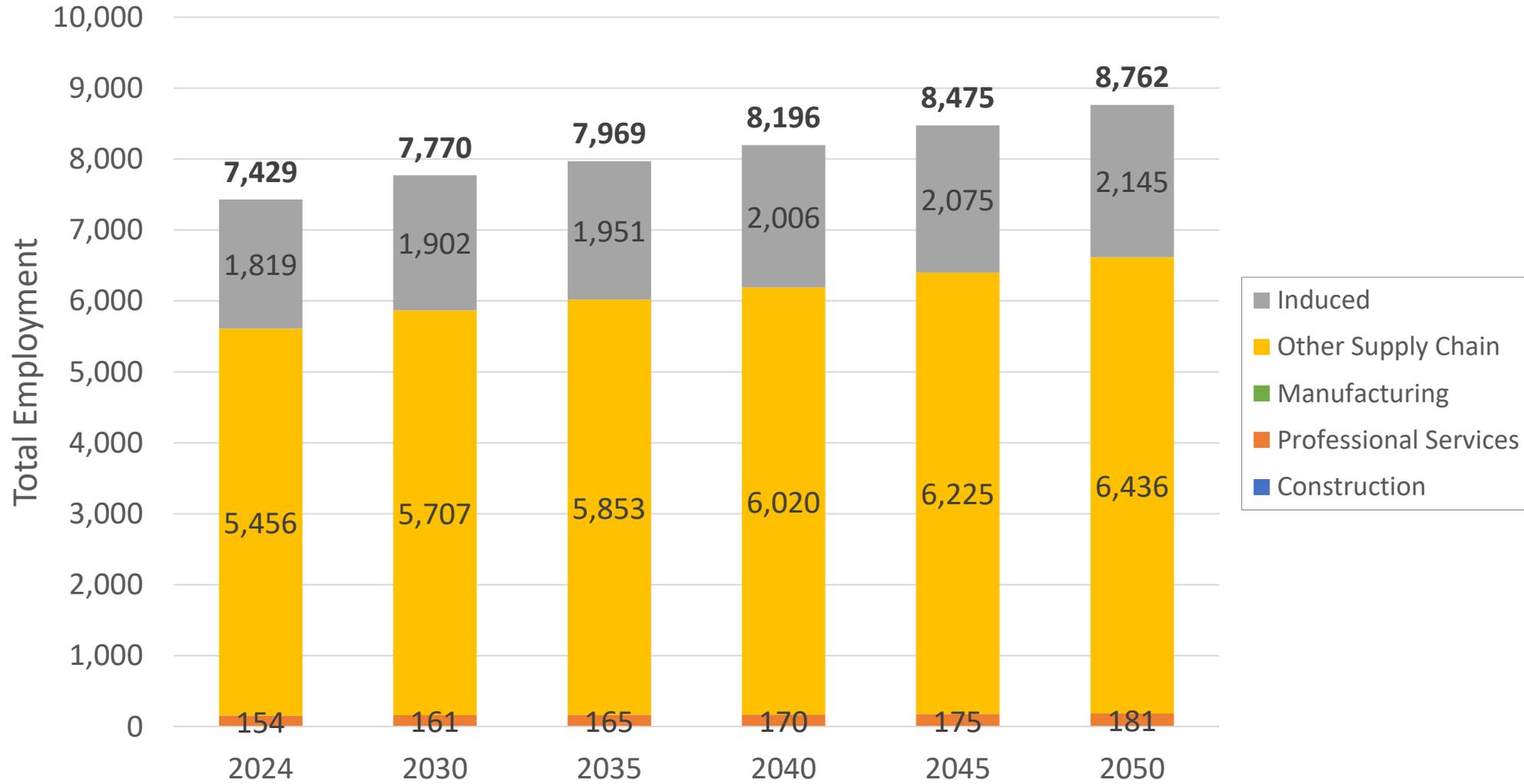
REFERENCE SCENARIO INPUTS: WHOLESALE TRADE PARTS, OREGON

Vehicle Stocks



* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: WHOLESALE TRADE PARTS, OREGON



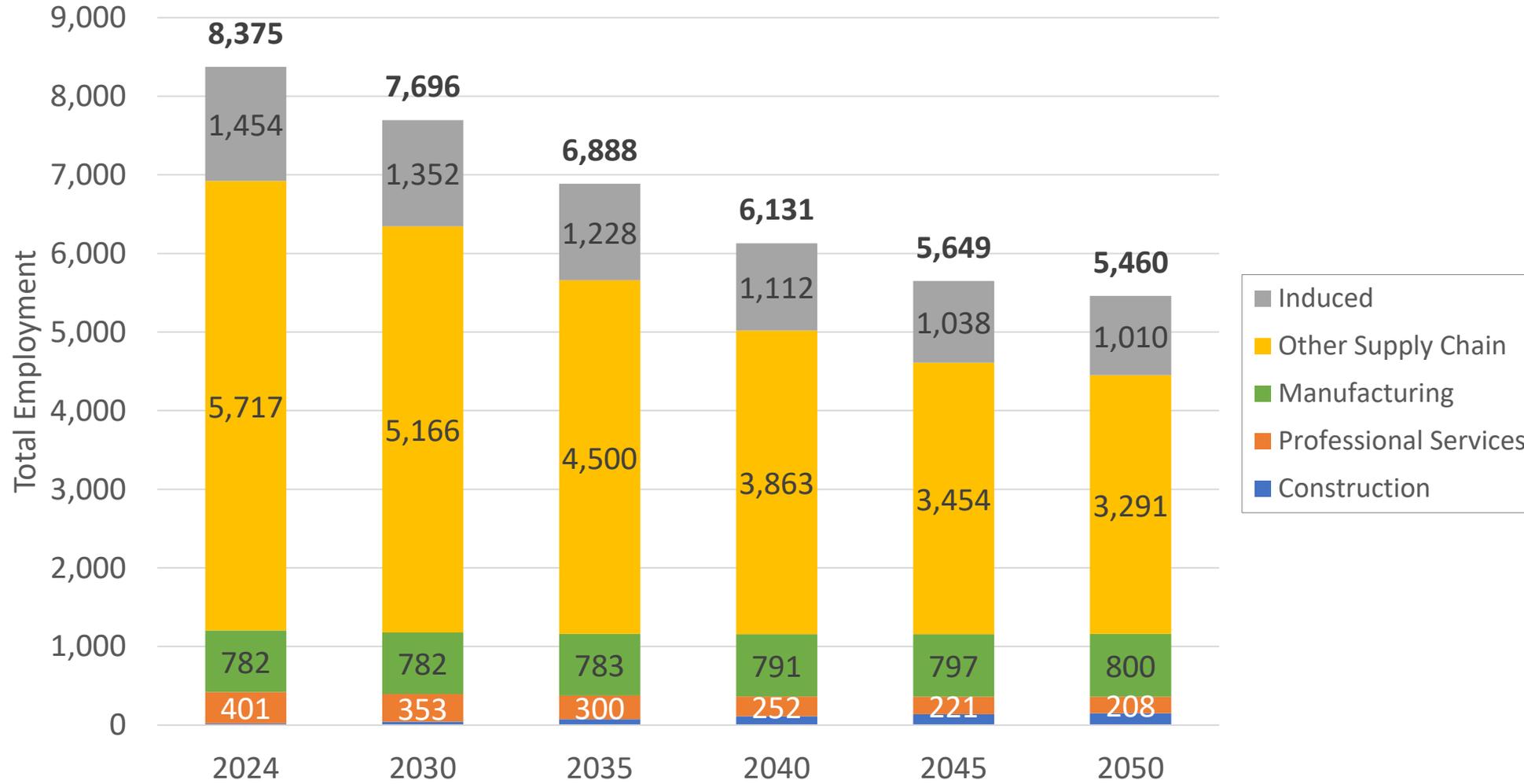
Note: Other Supply Chain employment is composed entirely of employment in the Wholesale Trade industry

REFERENCE SCENARIO: **TRANSPORTATION**, EAST OREGON*

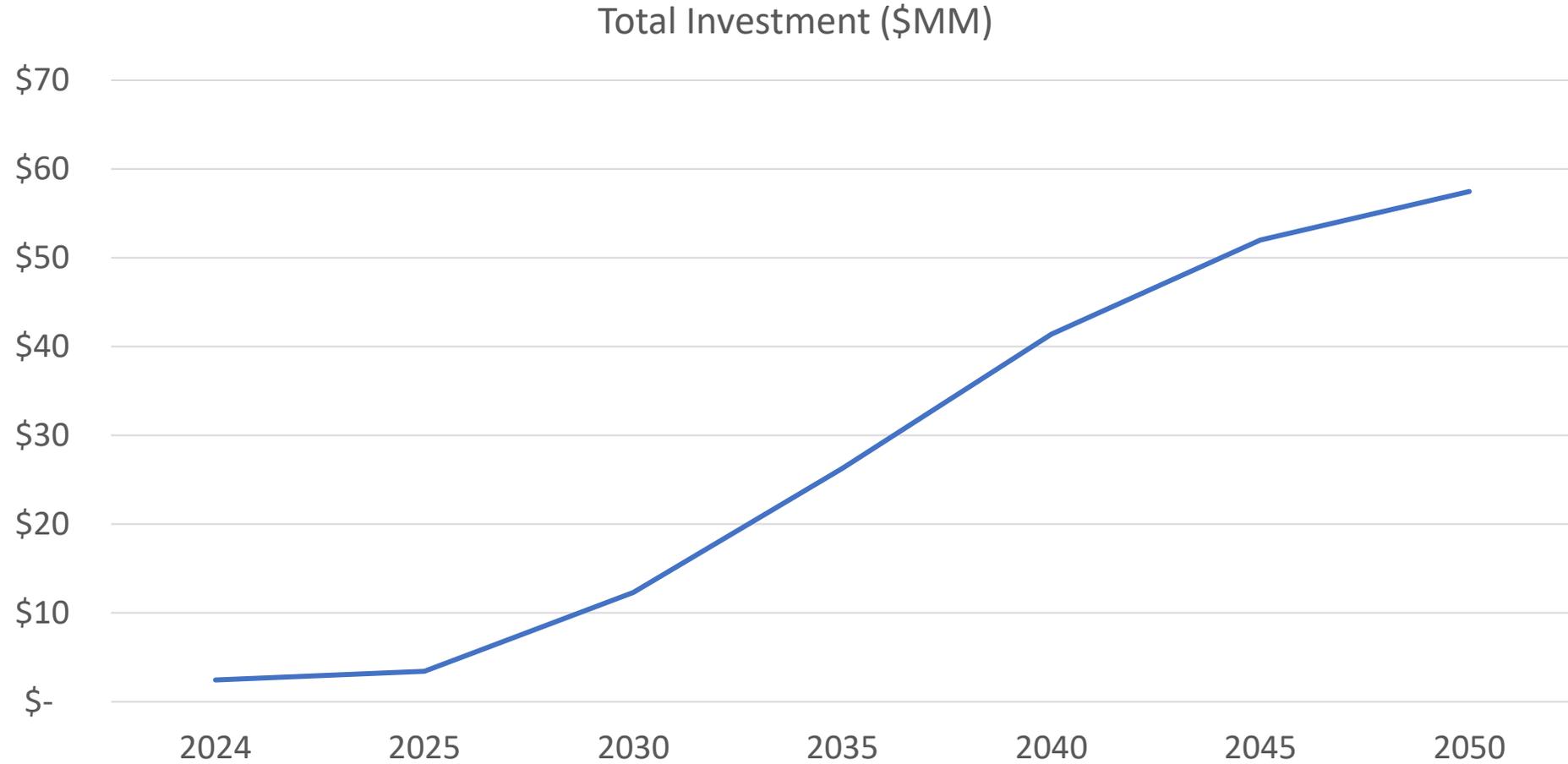
SUB-SECTOR	YEAR					
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Charging Stations	9	46	99	156	197	218
Vehicle Manufacturing	1,011	1,011	1,012	1,023	1,030	1,034
Wholesale Trade Parts	1,020	1,056	1,078	1,102	1,132	1,163
Sub-total	2,039	2,112	2,189	2,281	2,359	2,415
Change		73	150	242	320	376
Displacement Sub-Sectors						
Fueling Stations	3,972	3,349	2,695	2,099	1,722	1,548
Vehicle Maintenance	2,364	2,234	2,005	1,750	1,568	1,498
Sub-total	6,336	5,583	4,699	3,850	3,290	3,046
Change		-753	-1,637	-2,486	-3,046	-3,290
Transportation OVERALL	8,375	7,696	6,888	6,131	5,649	5,460
Net Change from 2024		-679	-1,487	-2,244	-2,726	-2,915

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

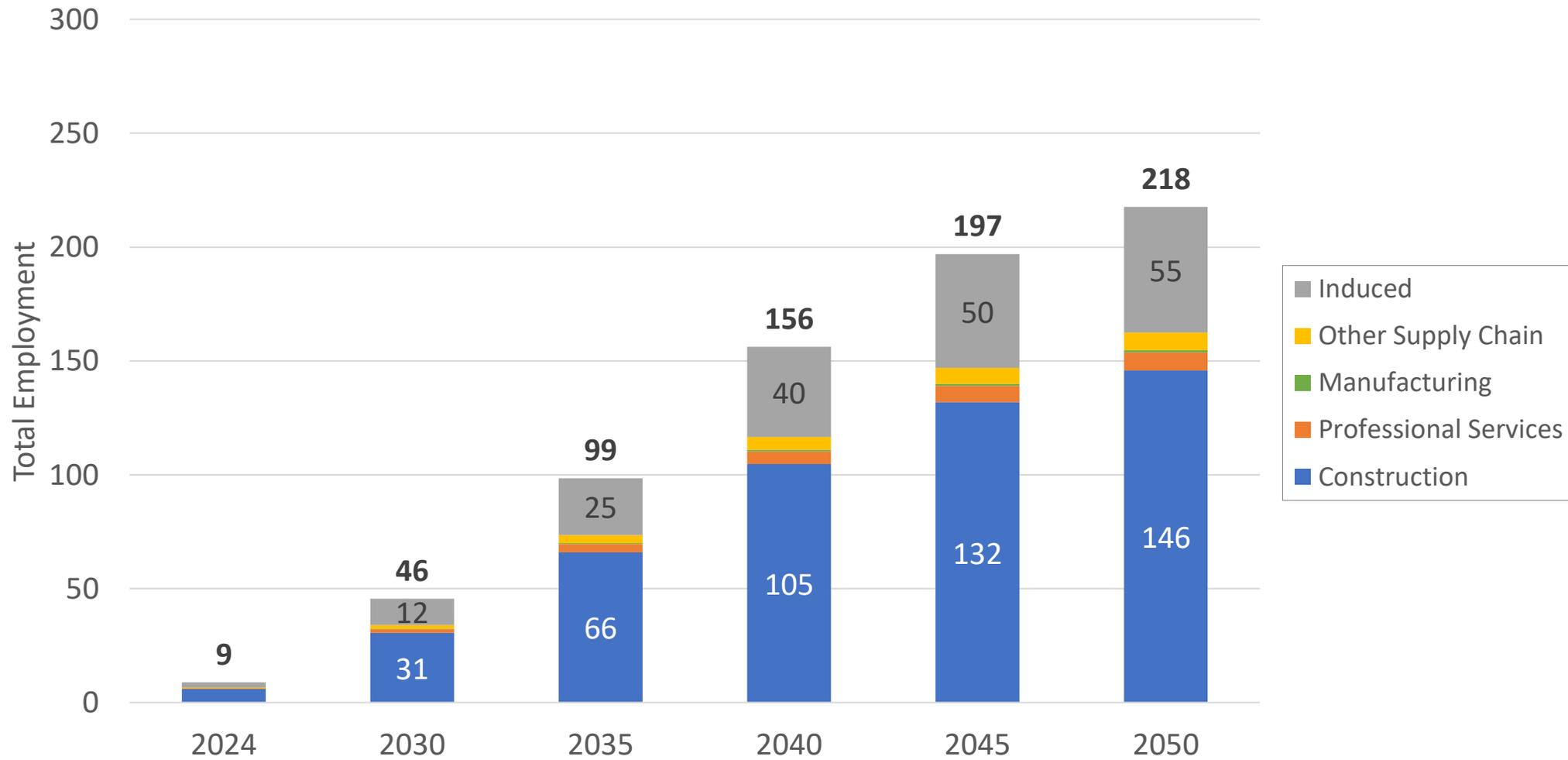
REFERENCE SCENARIO: TRANSPORTATION – TOTALS, EAST OREGON



REFERENCE SCENARIO INPUTS: CHARGING STATIONS, EAST OREGON

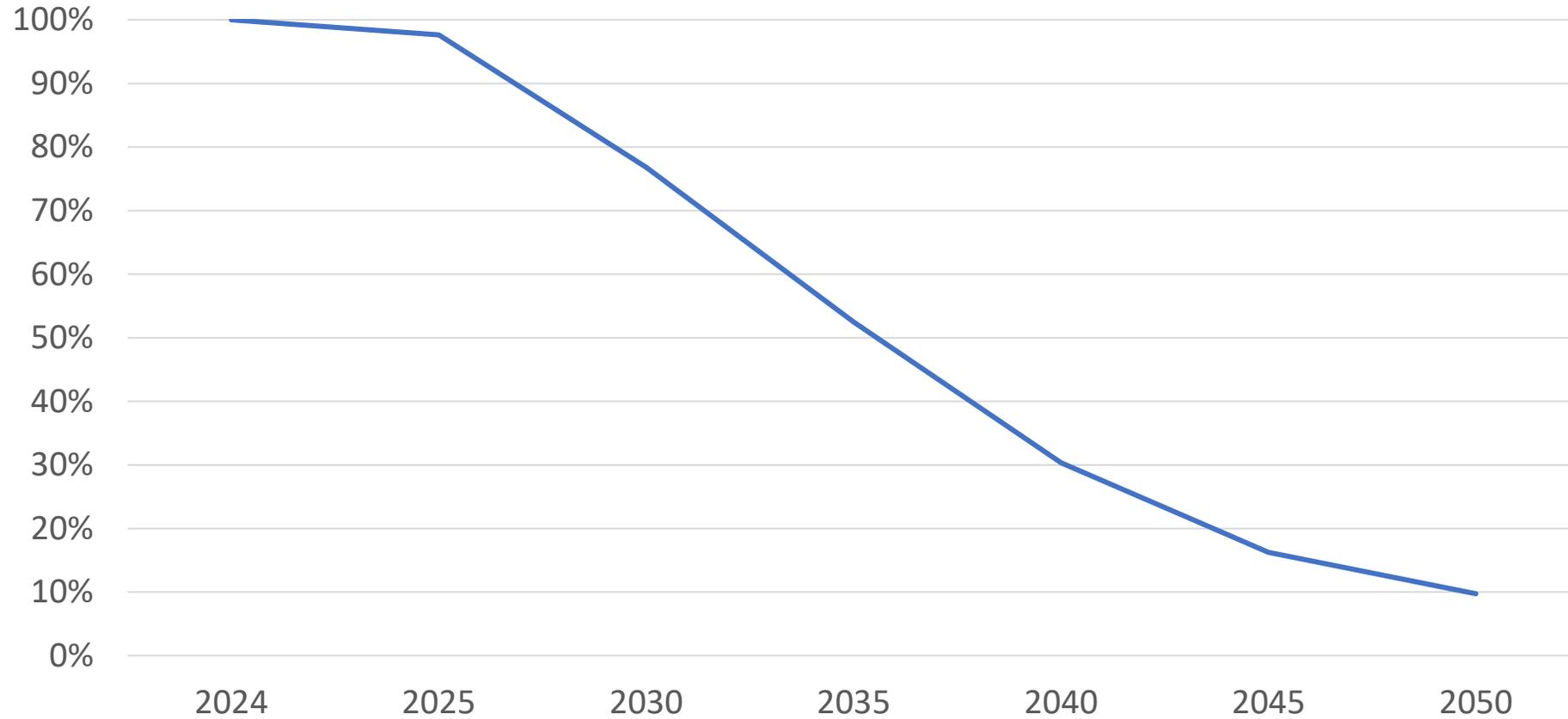


REFERENCE SCENARIO OUTPUTS: CHARGING STATIONS, EAST OREGON

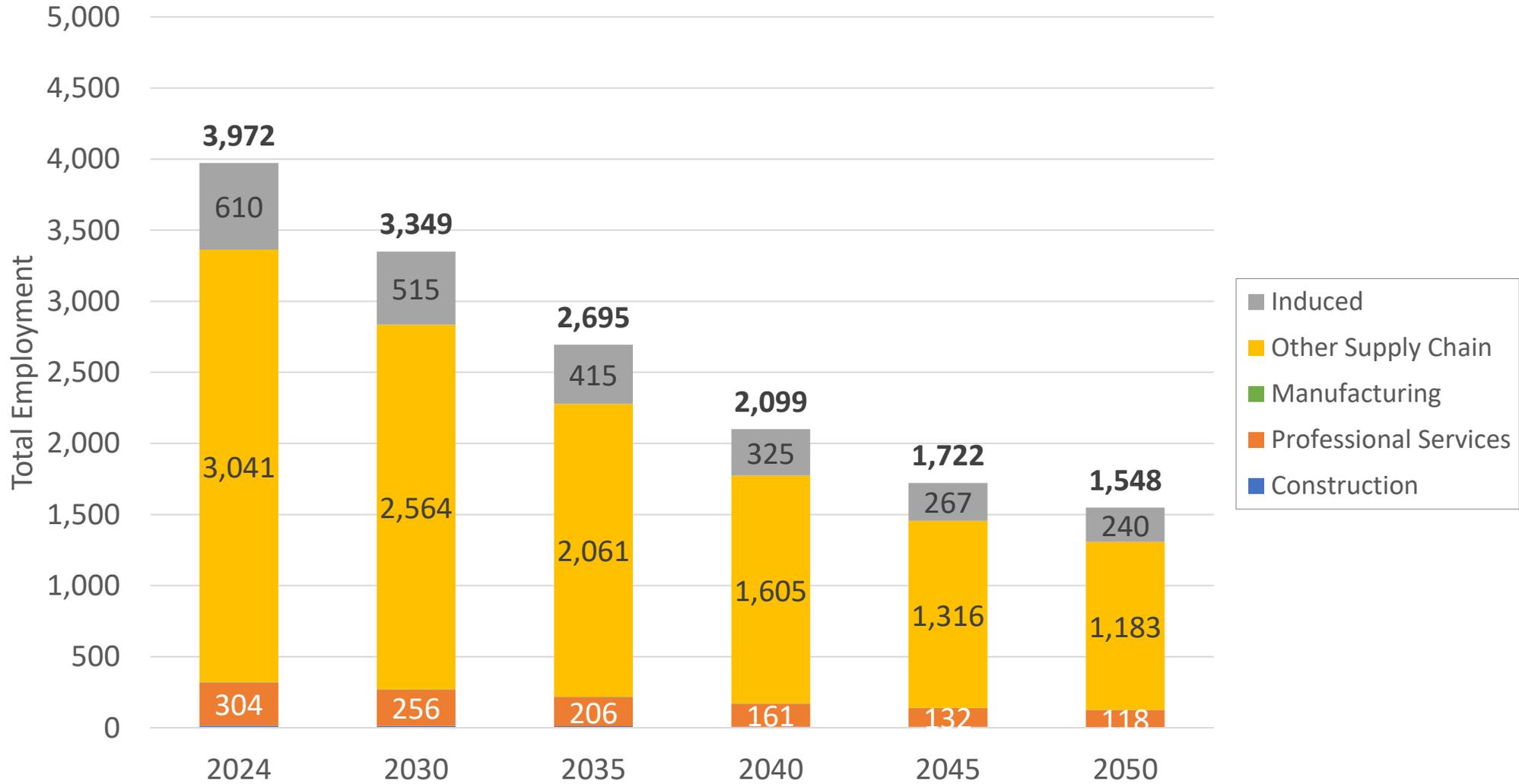


REFERENCE SCENARIO INPUTS: FUELING STATIONS, EAST OREGON

Fuel Demand Relative to 2024

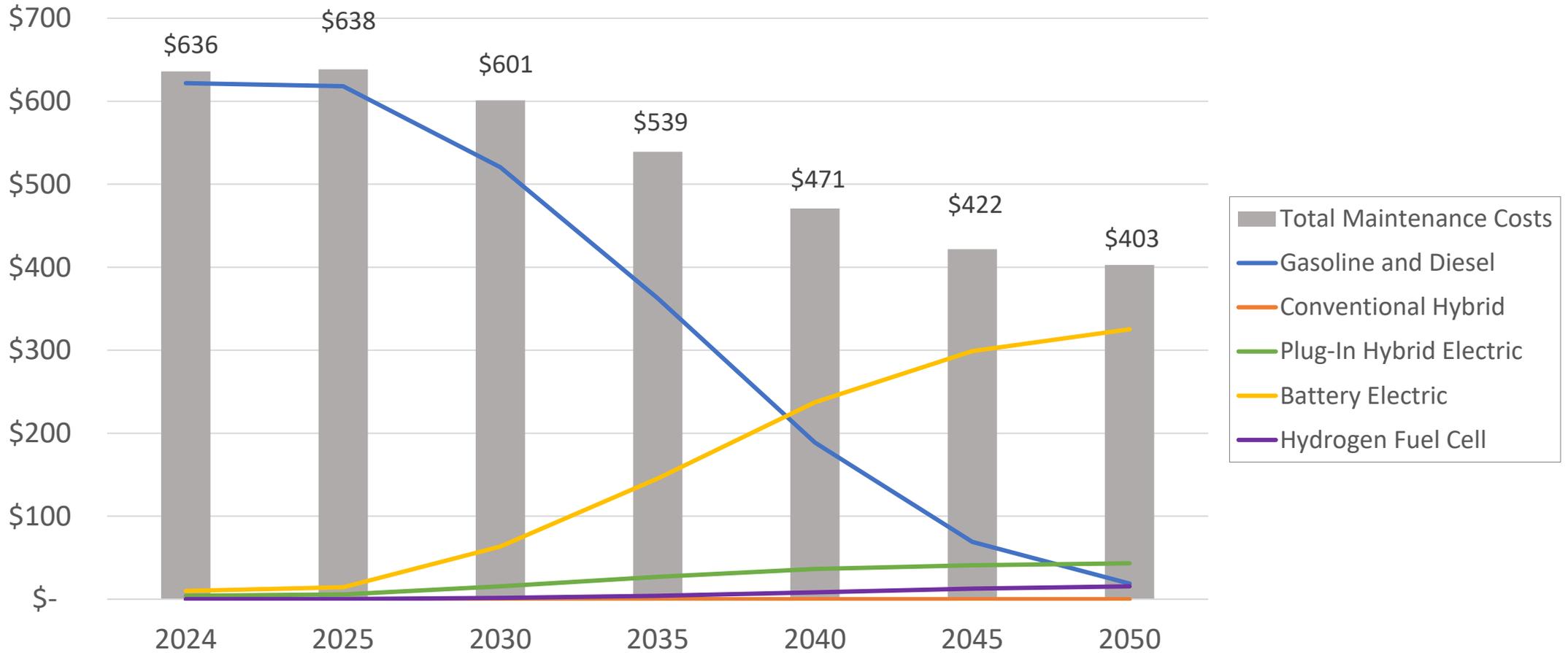


REFERENCE SCENARIO OUTPUTS: FUELING STATIONS, EAST OREGON

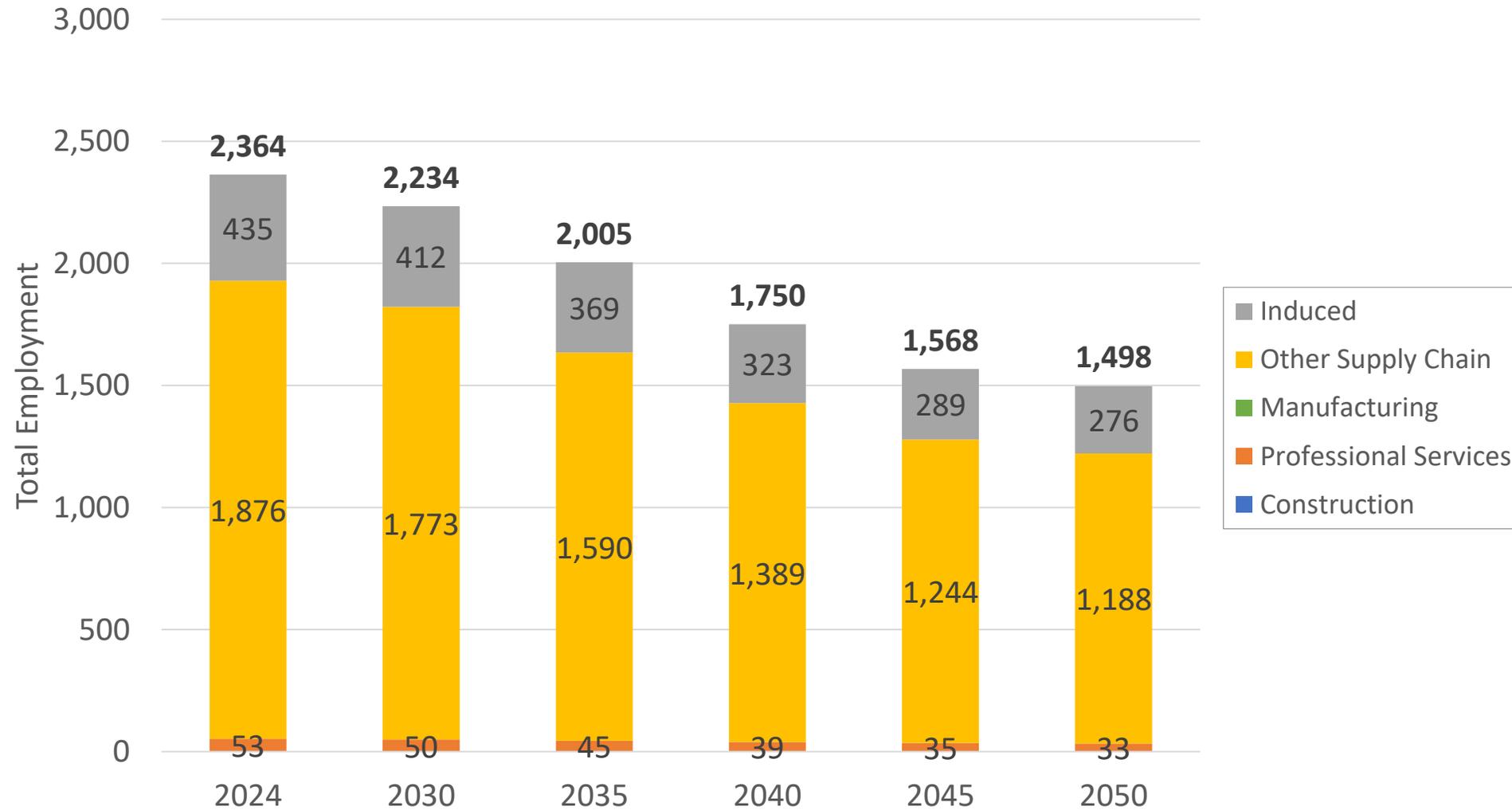


REFERENCE SCENARIO INPUTS: VEHICLE MAINTENANCE, EAST OREGON

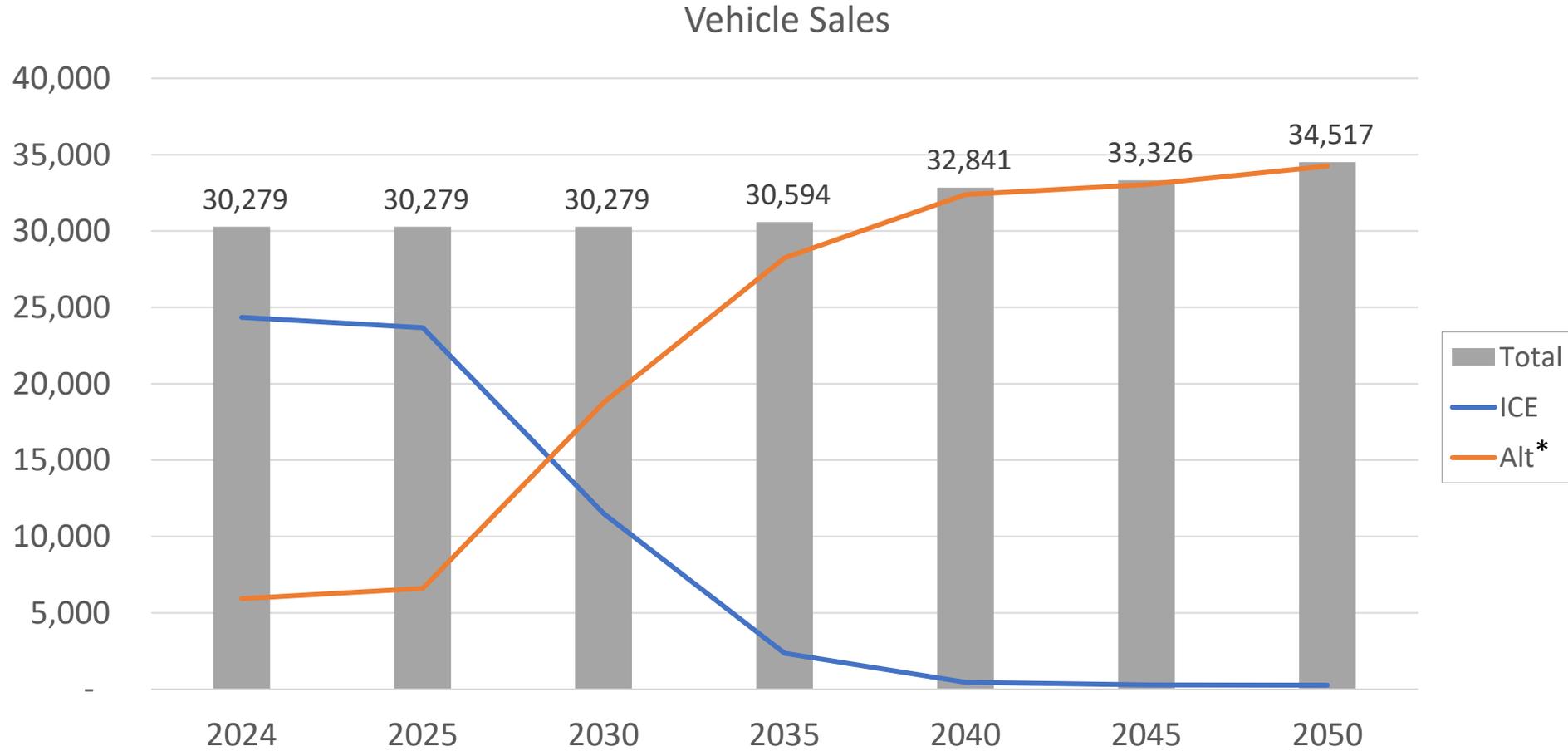
Vehicle Maintenance Costs (\$MM)



REFERENCE SCENARIO OUTPUTS: VEHICLE MAINTENANCE, EAST OREGON

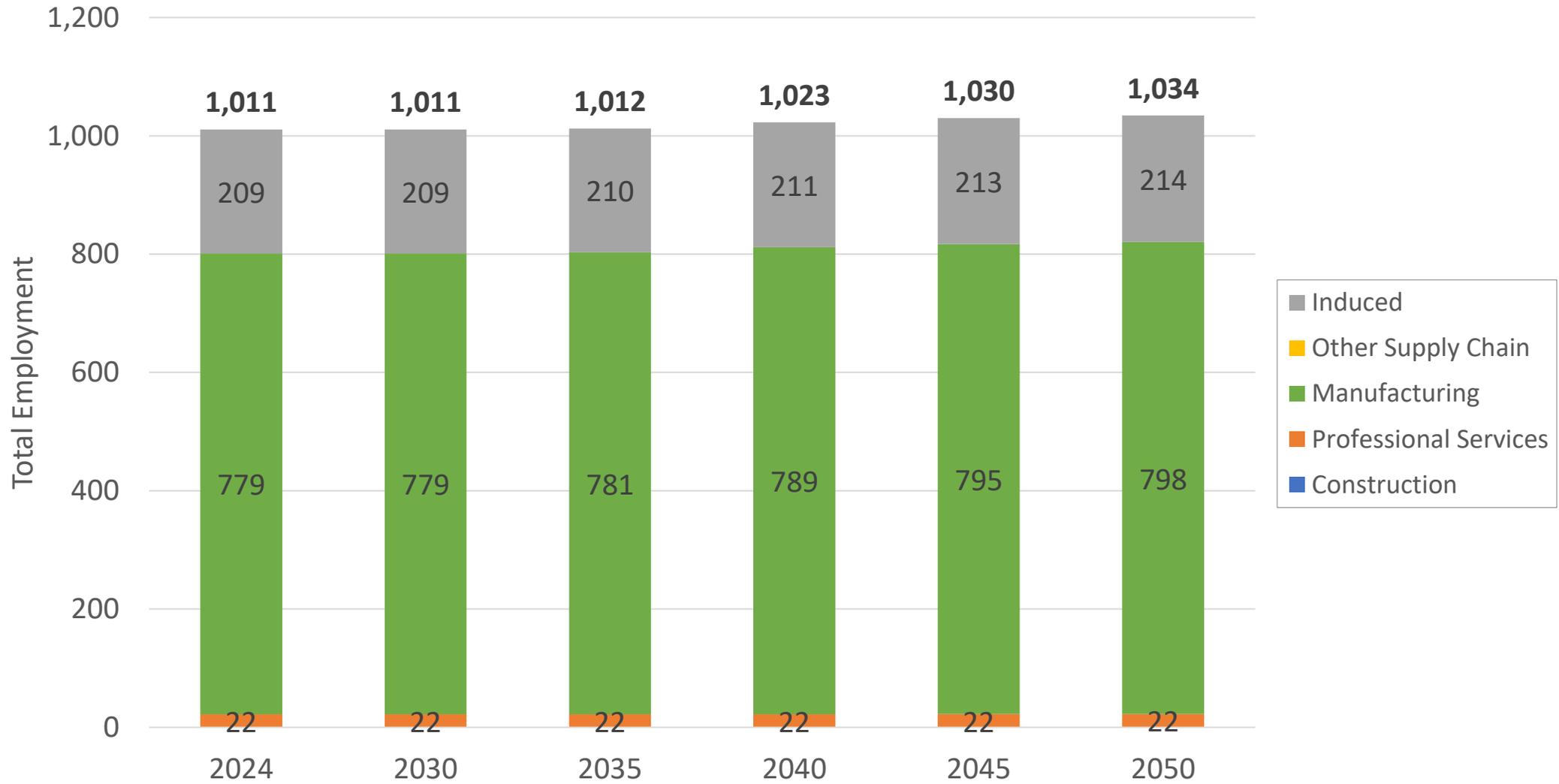


REFERENCE SCENARIO INPUTS: VEHICLE MANUFACTURING, EAST OREGON

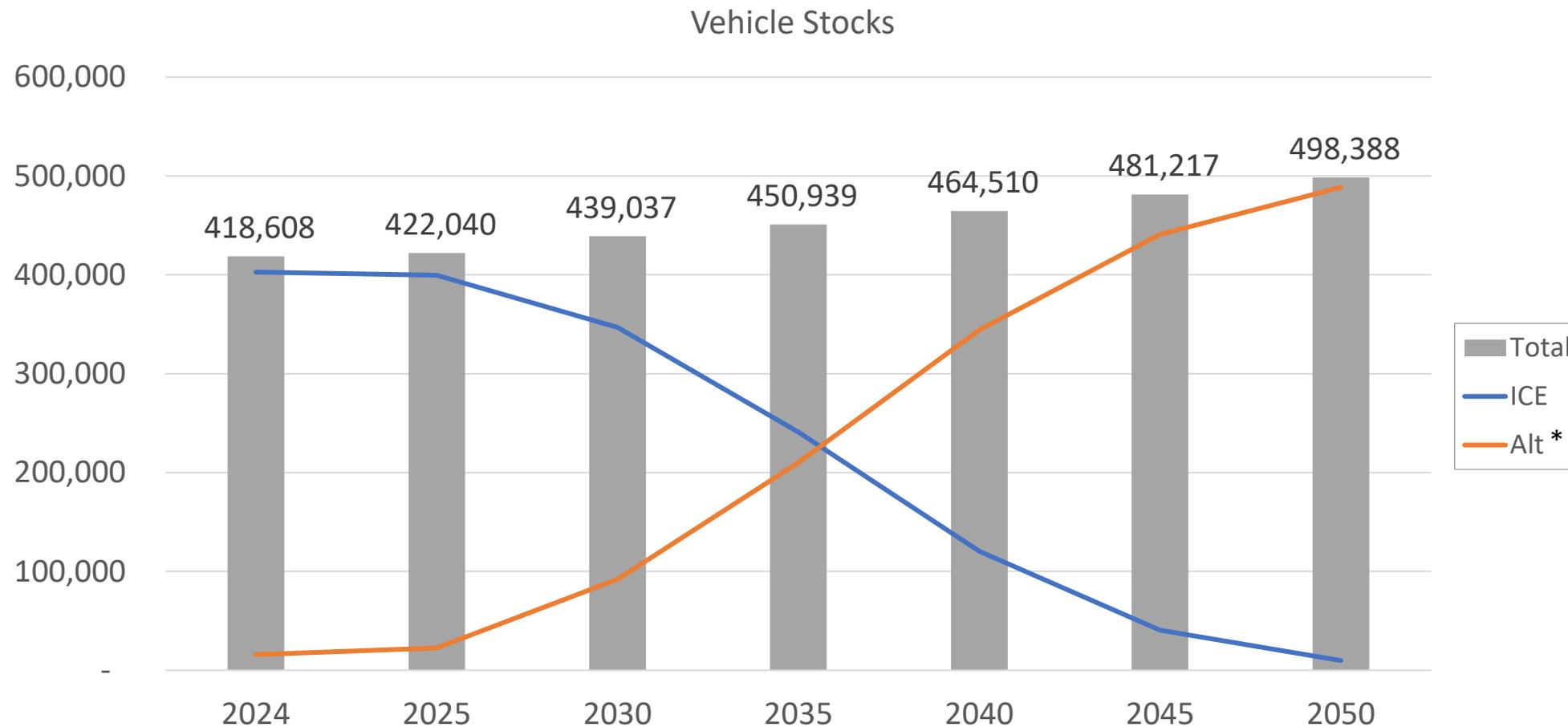


* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: VEHICLE MANUFACTURING, EAST OREGON

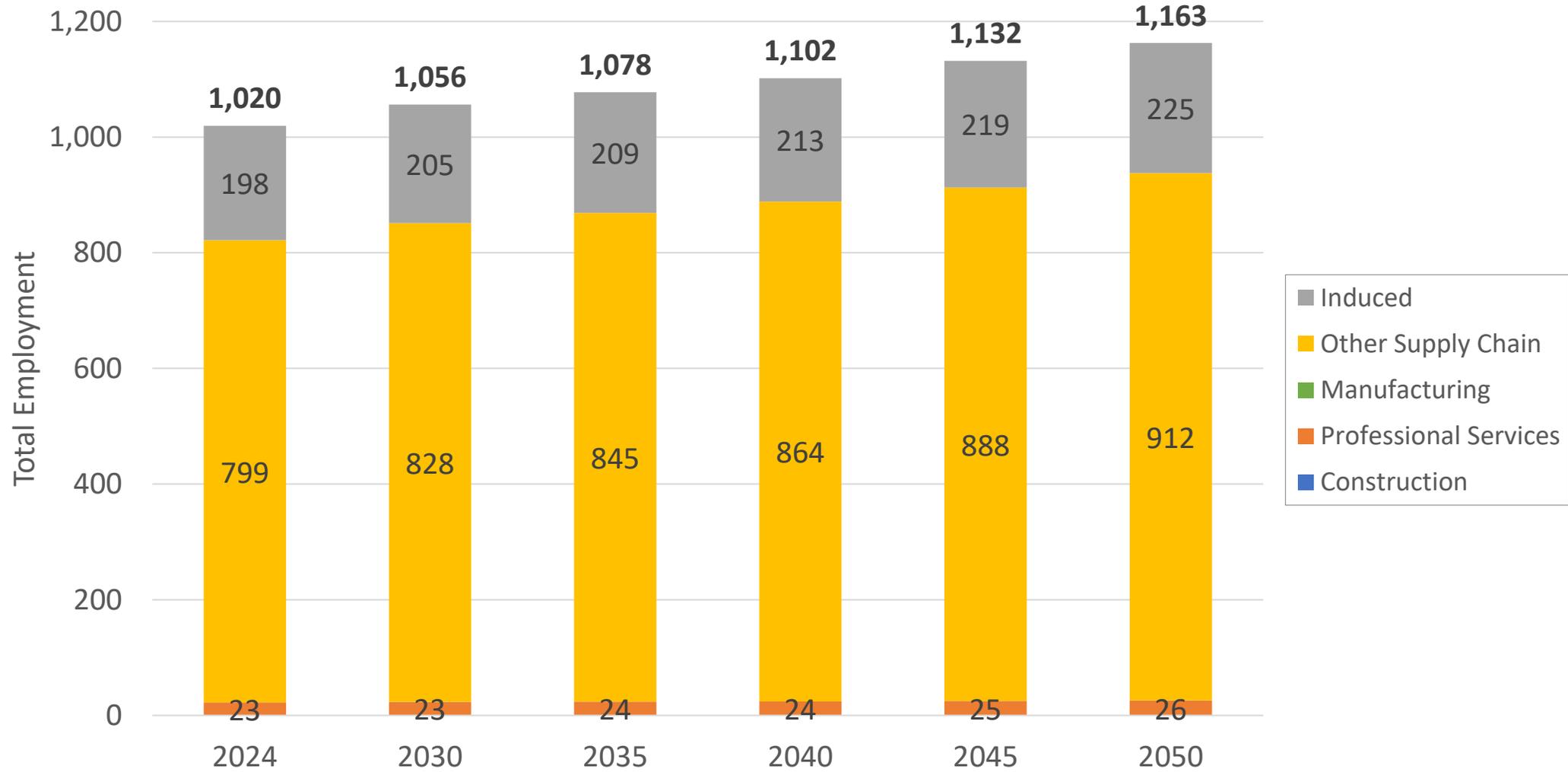


REFERENCE SCENARIO INPUTS: WHOLESALE TRADE PARTS, EAST OREGON



* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: WHOLESALE TRADE PARTS, EAST OREGON

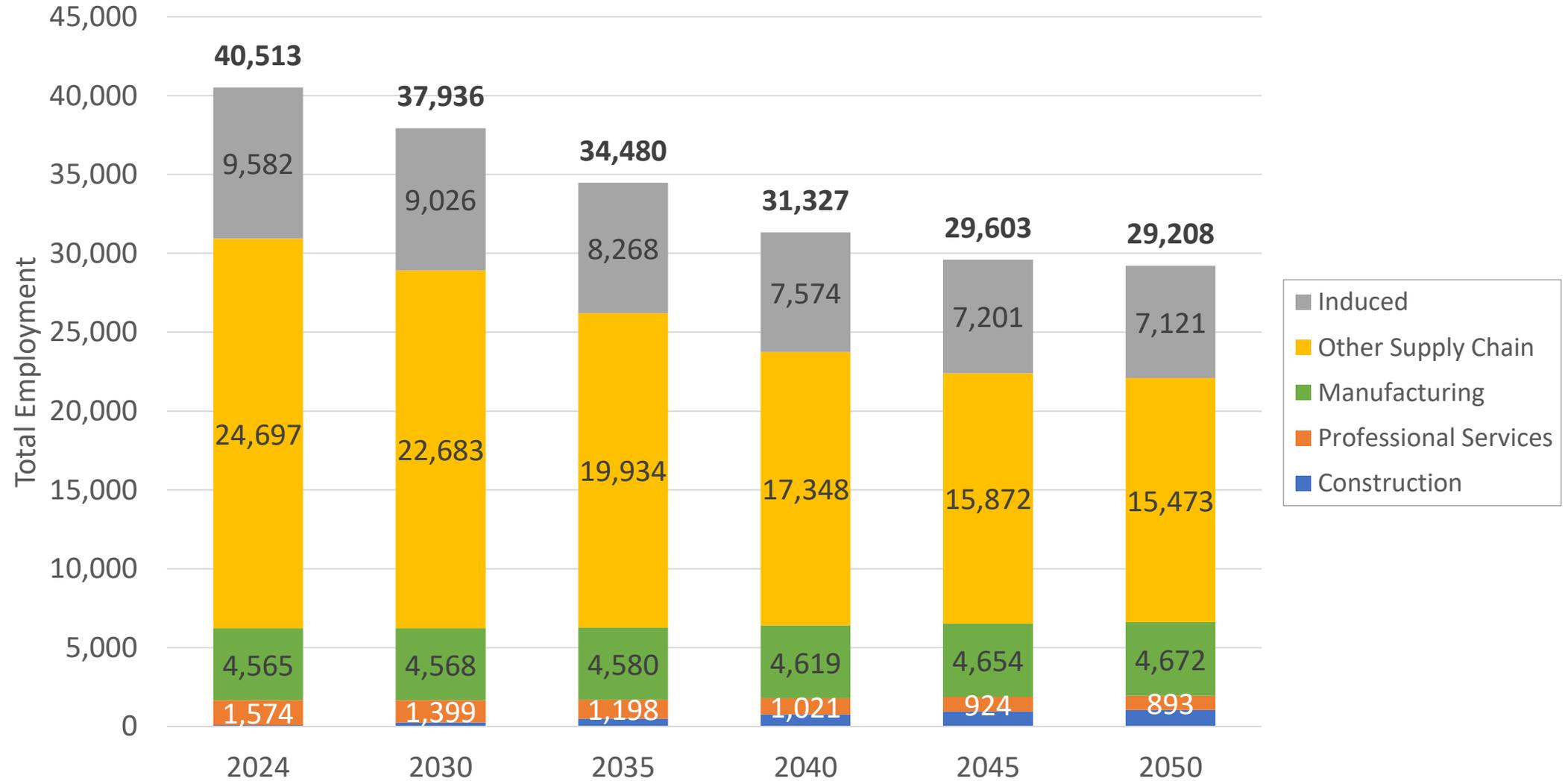


REFERENCE SCENARIO: TRANSPORTATION, WEST OREGON*

SUB-SECTOR						
	2024	2030	2035	2040	2045	2050
Growing Sub-Sectors						
Charging Stations	67	343	740	1,173	1,478	1,634
Vehicle Manufacturing	6,289	6,289	6,299	6,342	6,388	6,409
Wholesale Trade Parts	6,409	6,714	6,892	7,094	7,343	7,599
Sub-total	12,765	13,346	13,930	14,608	15,209	15,642
Change		581	1,165	1,843	2,444	2,877
Displacement Sub-Sectors						
Fueling Stations	13,031	10,745	8,238	6,037	4,808	4,328
Vehicle Maintenance	14,716	13,845	12,311	10,681	9,586	9,238
Sub-total	27,747	24,590	20,549	16,718	14,394	13,566
Change		-3,157	-7,198	-11,029	-13,353	-14,181
Transportation OVERALL	40,513	37,936	34,480	31,327	29,603	29,208
Net Change from 2024		-2,576	-6,033	-9,186	-10,909	-11,304

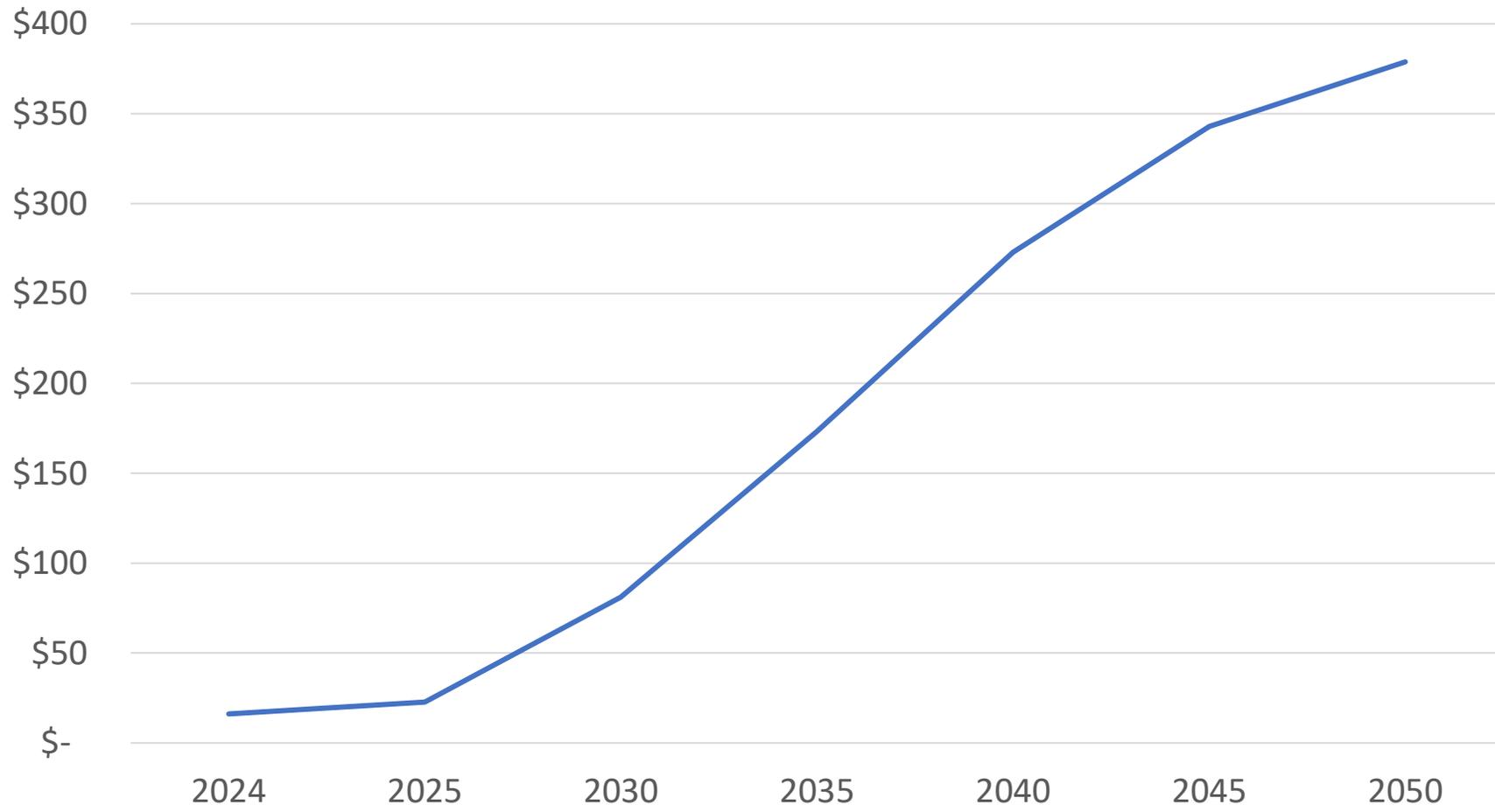
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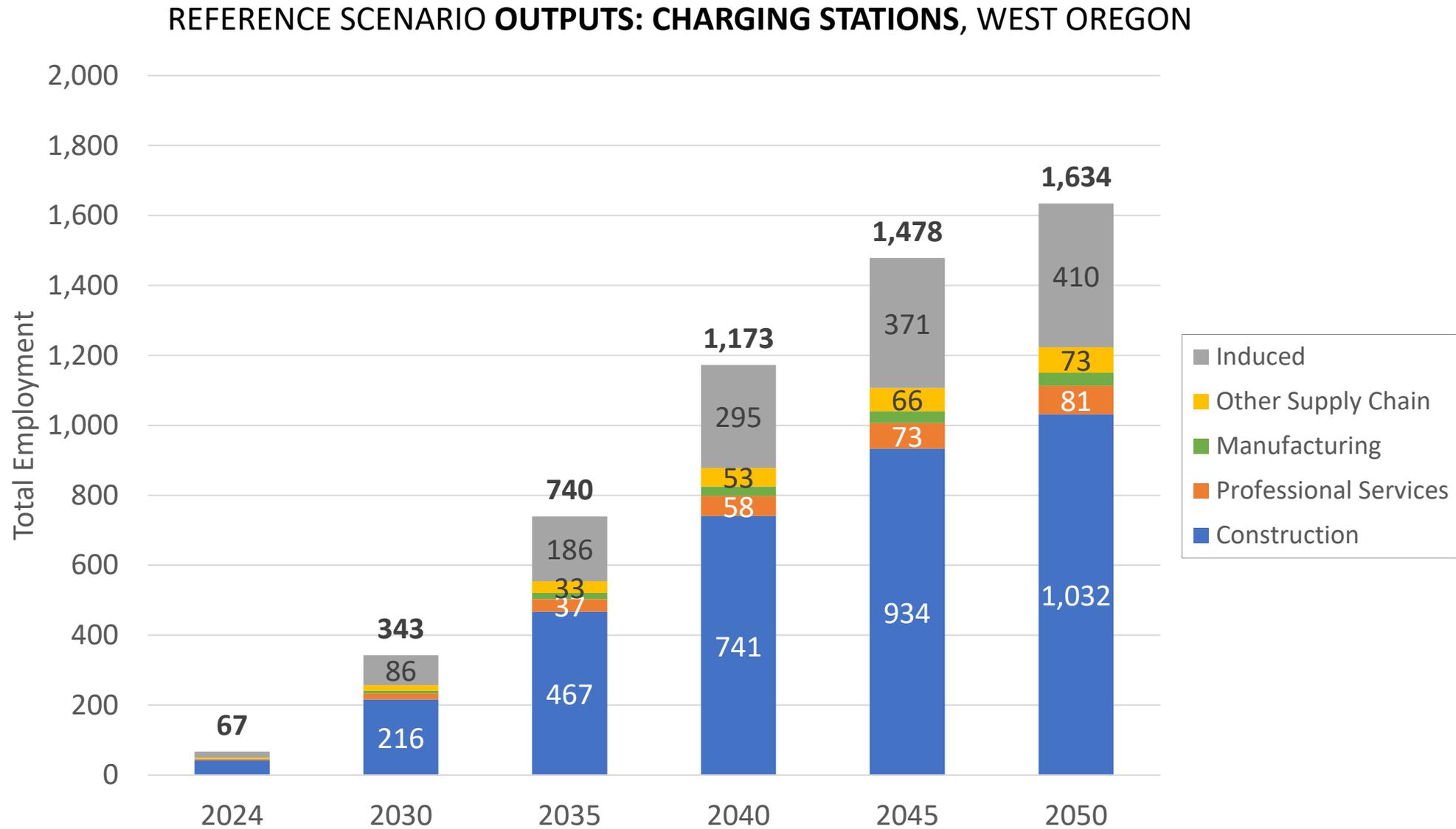
REFERENCE SCENARIO: TRANSPORTATION – TOTALS, WEST OREGON



REFERENCE SCENARIO INPUTS: CHARGING STATIONS, WEST OREGON

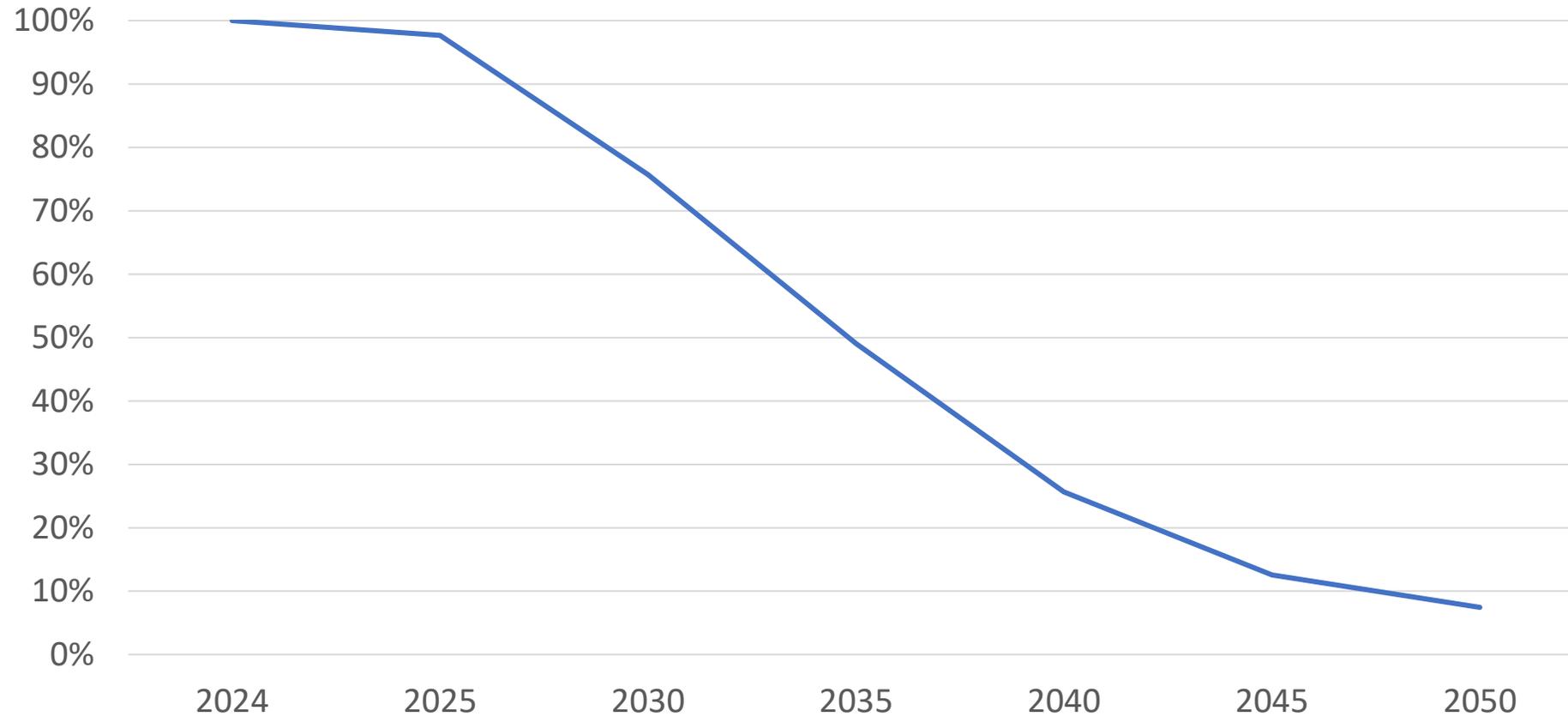
Total Investment (\$MM)



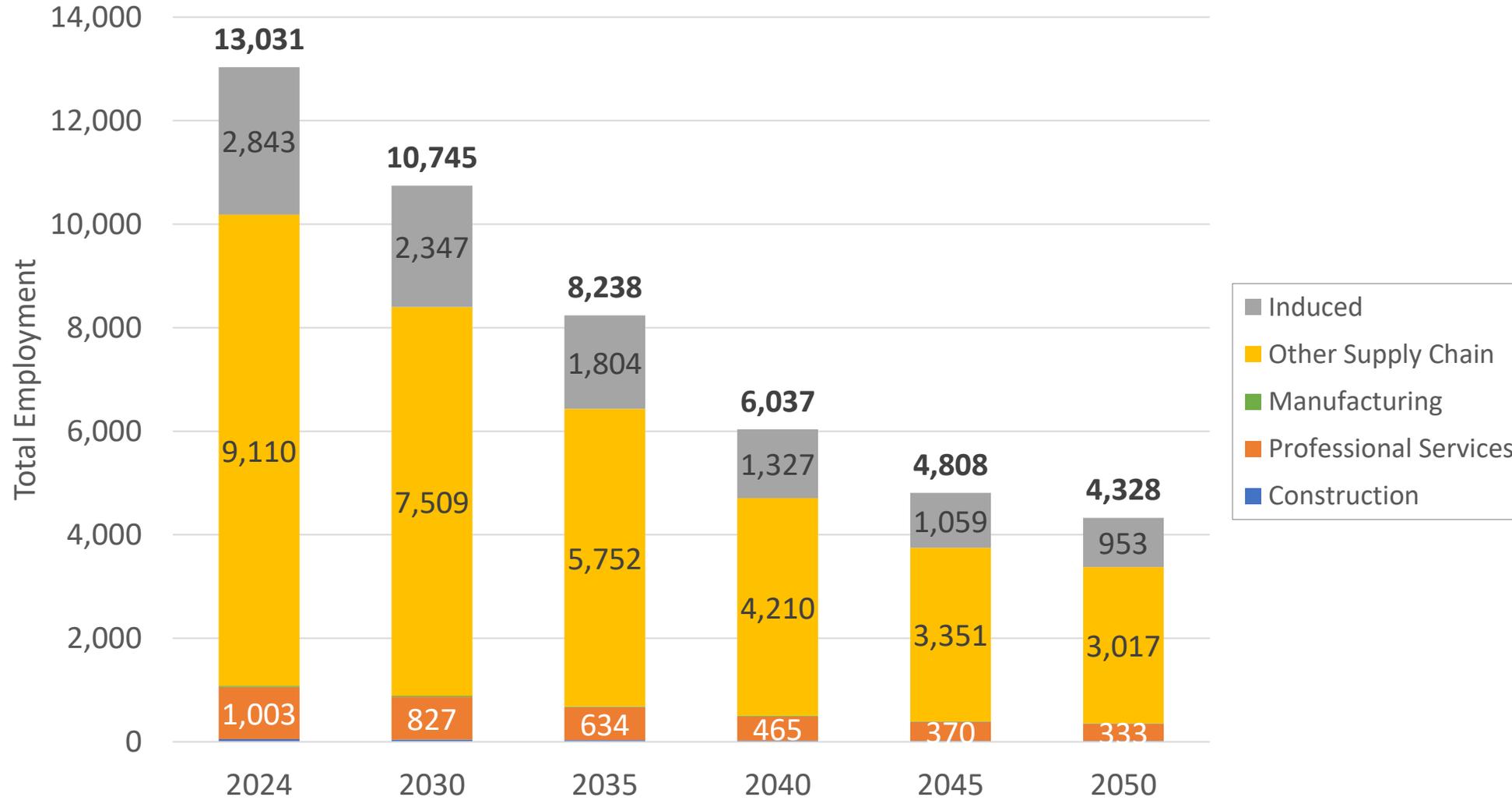


REFERENCE SCENARIO INPUTS: FUELING STATIONS, WEST OREGON

Fuel Demand Relative to 2024

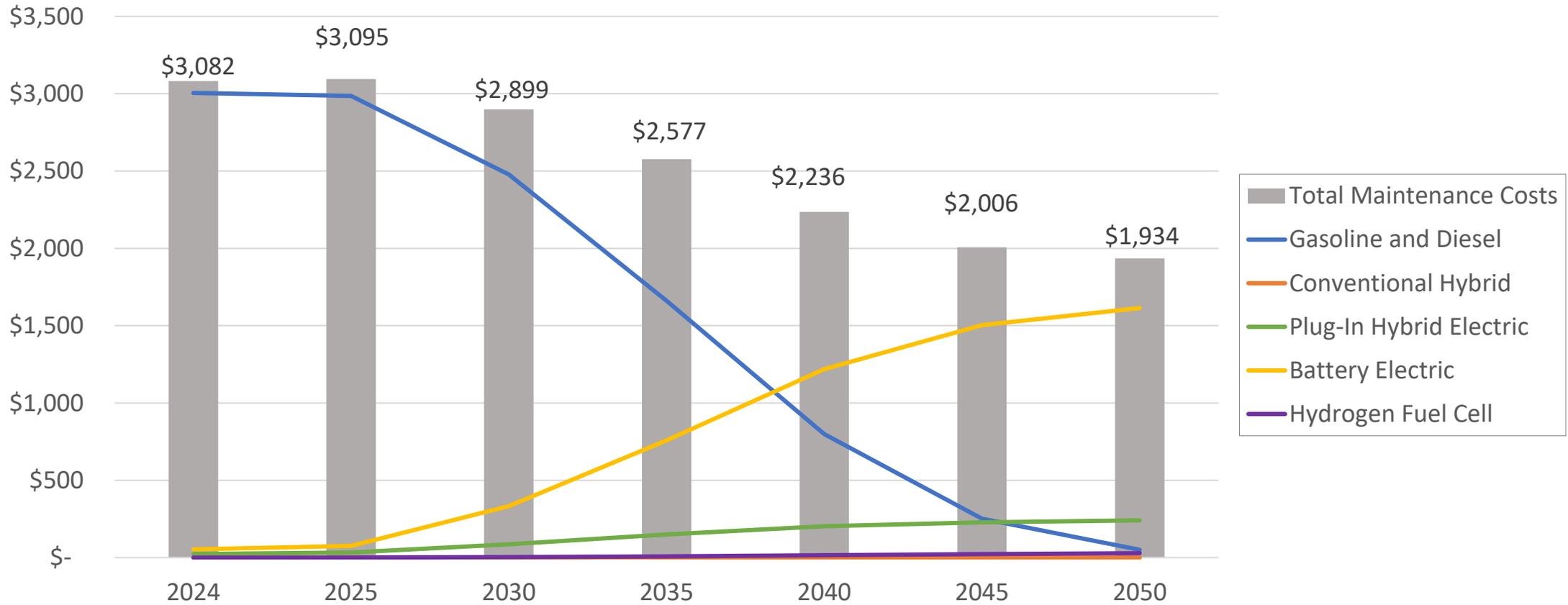


REFERENCE SCENARIO OUTPUTS: FUELING STATIONS, WEST OREGON

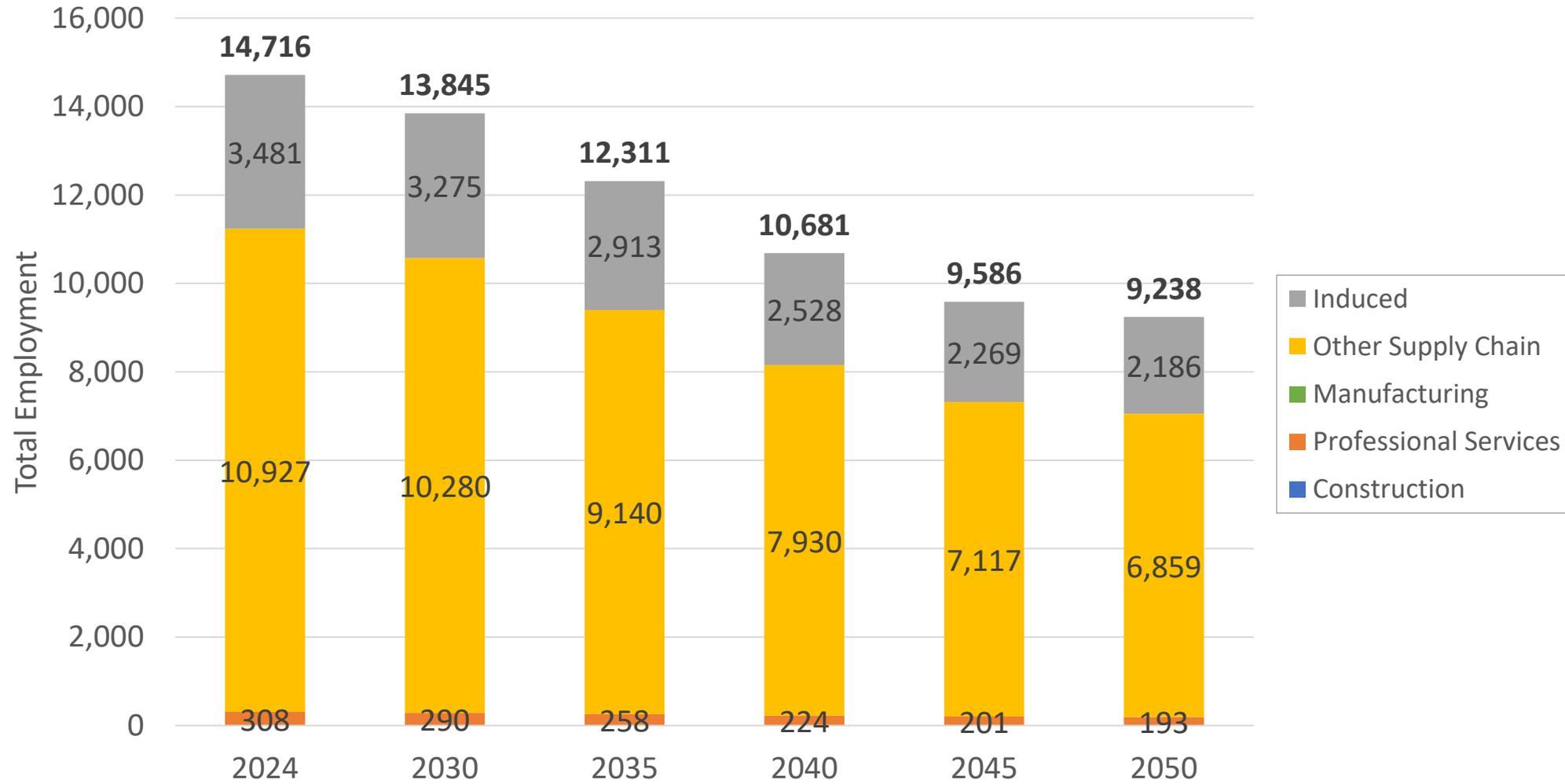


REFERENCE SCENARIO INPUTS: VEHICLE MAINTENANCE, WEST OREGON

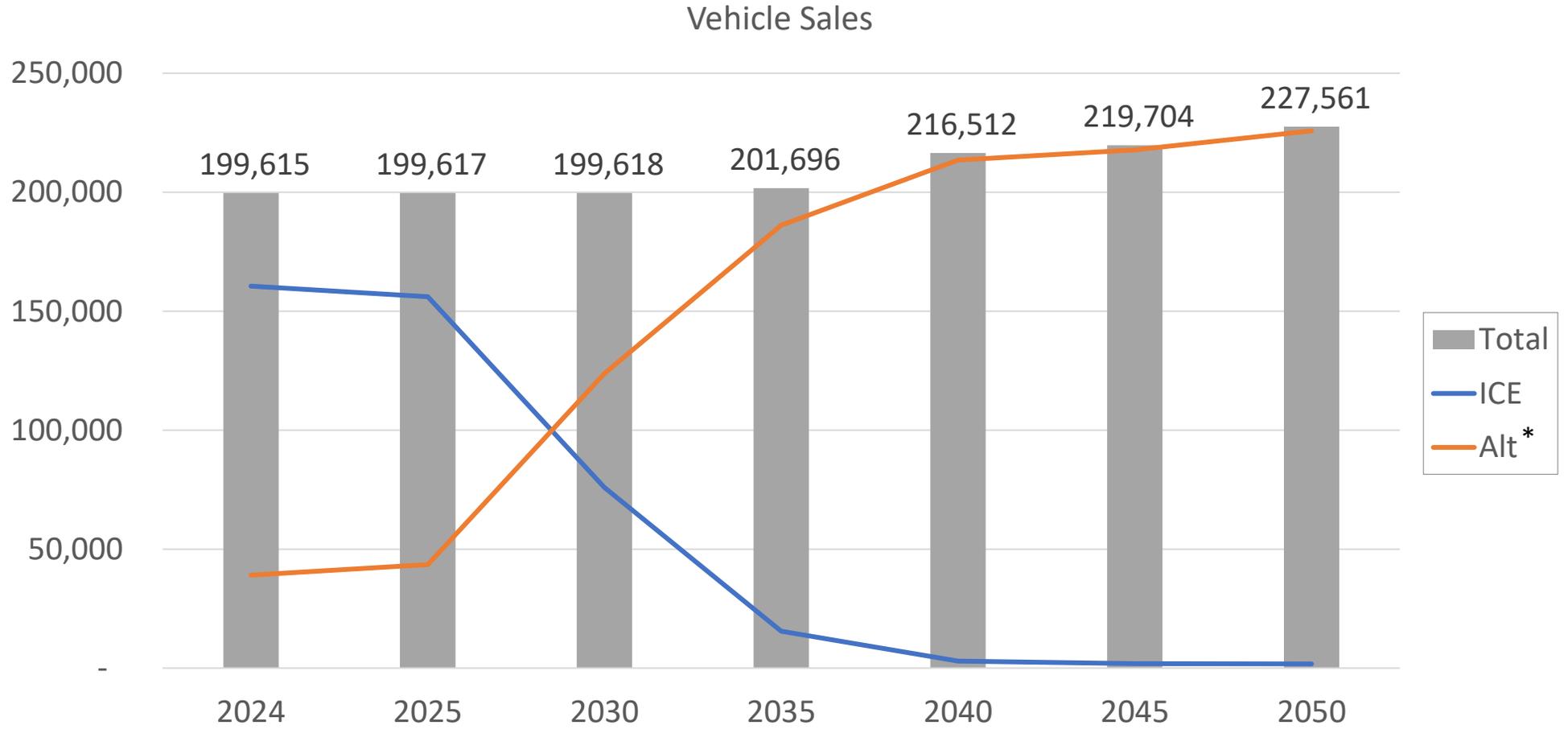
Vehicle Maintenance Costs (\$MM)



REFERENCE SCENARIO OUTPUTS: VEHICLE MAINTENANCE, WEST OREGON

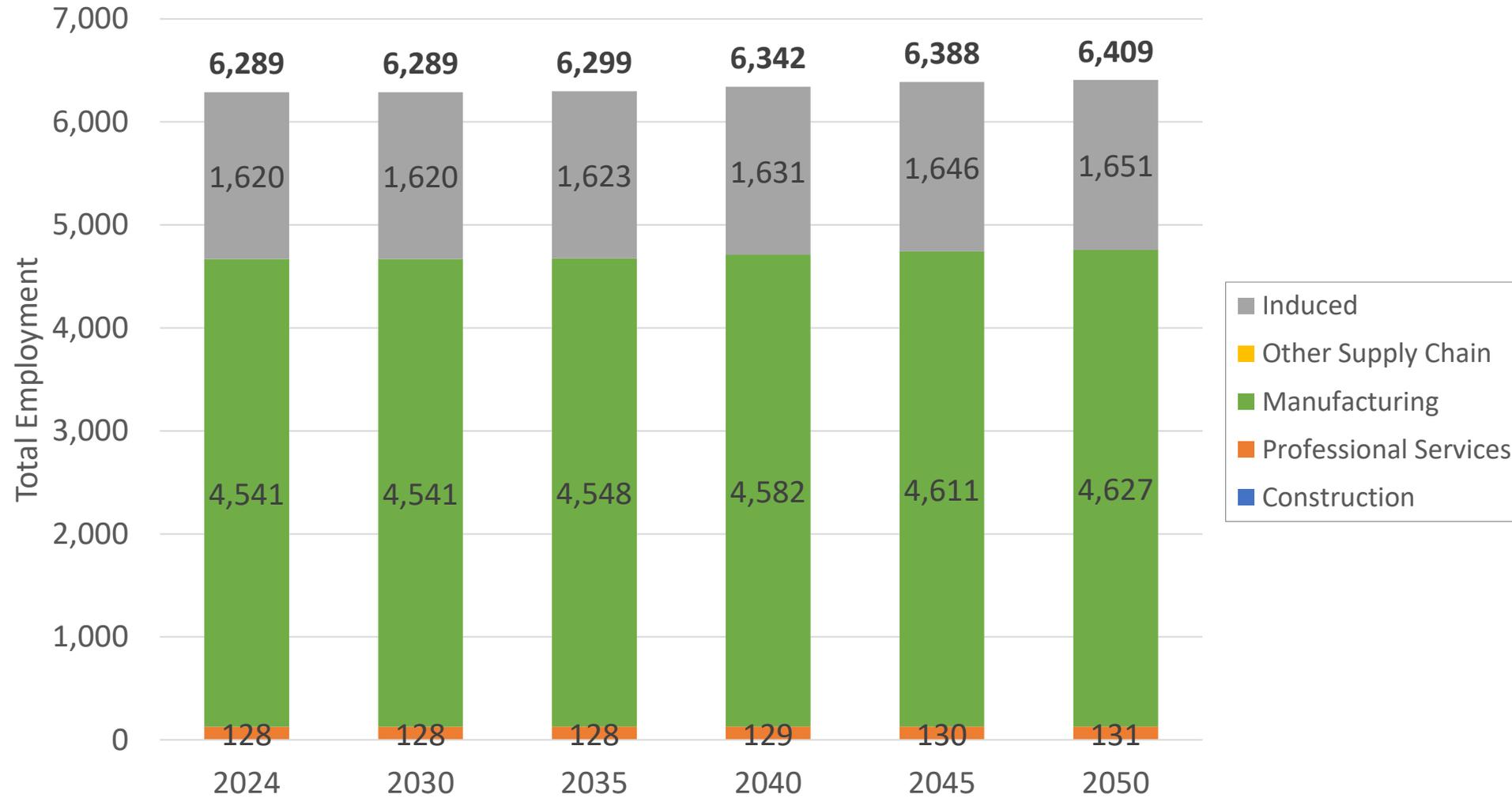


REFERENCE SCENARIO INPUTS: VEHICLE MANUFACTURING, WEST OREGON

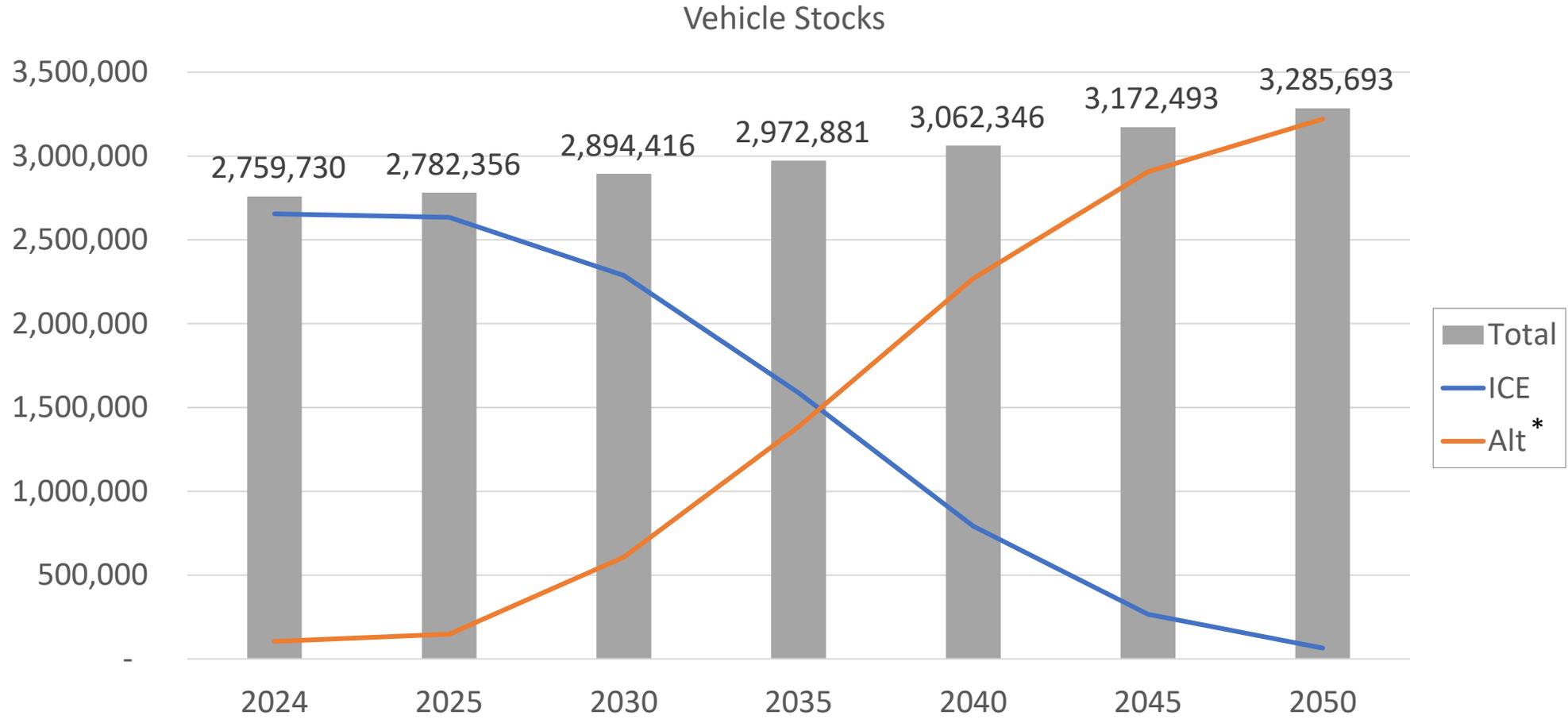


* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: VEHICLE MANUFACTURING, WEST OREGON

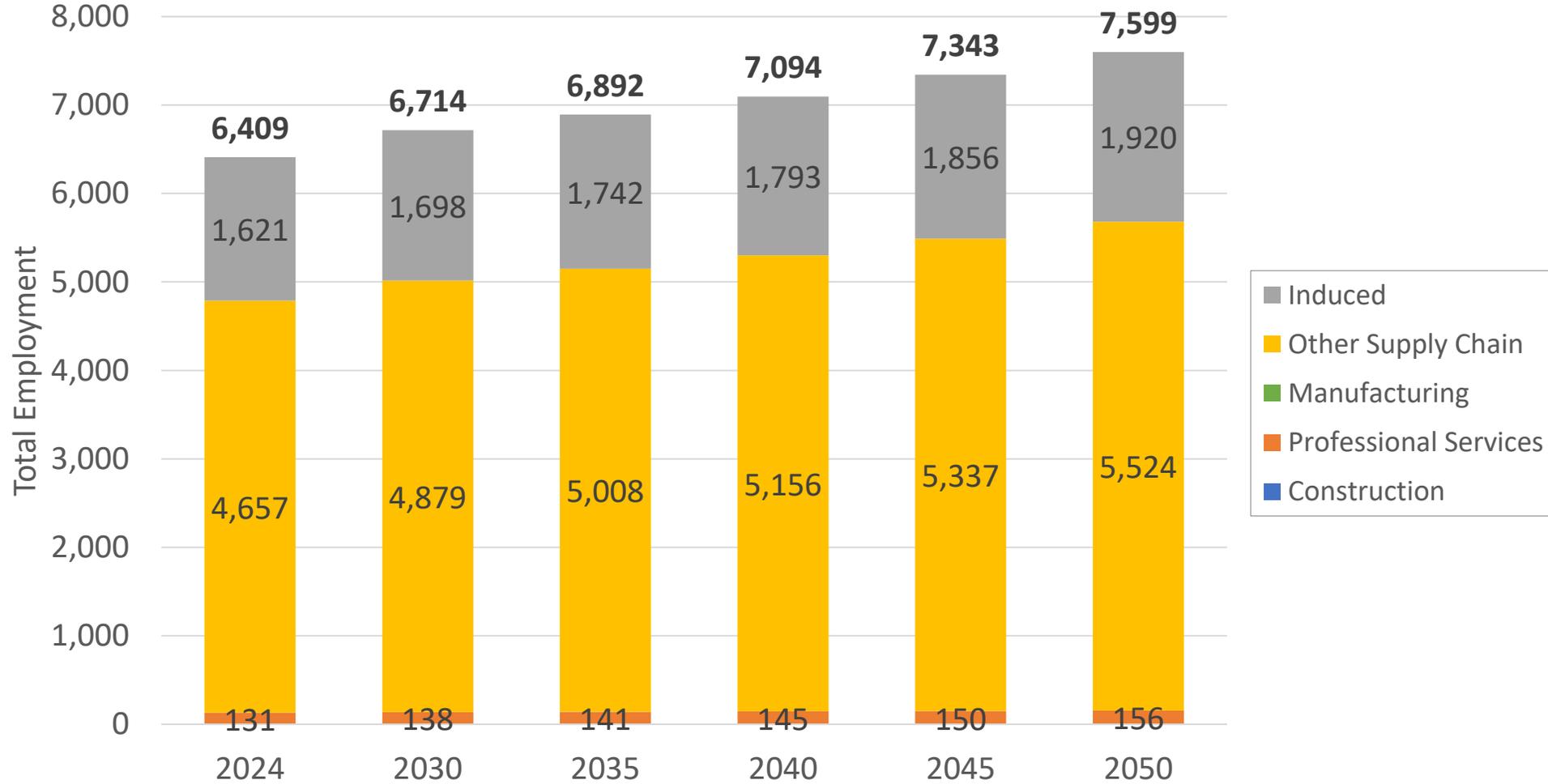


REFERENCE SCENARIO INPUTS: WHOLESALE TRADE PARTS, WEST OREGON



* Alt vehicle technologies include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles.

REFERENCE SCENARIO OUTPUTS: WHOLESALE TRADE PARTS, WEST OREGON





Part 4.1

Reference Scenario Secondary Employment Outputs (SEOs) – Oregon

Oregon Energy Strategy

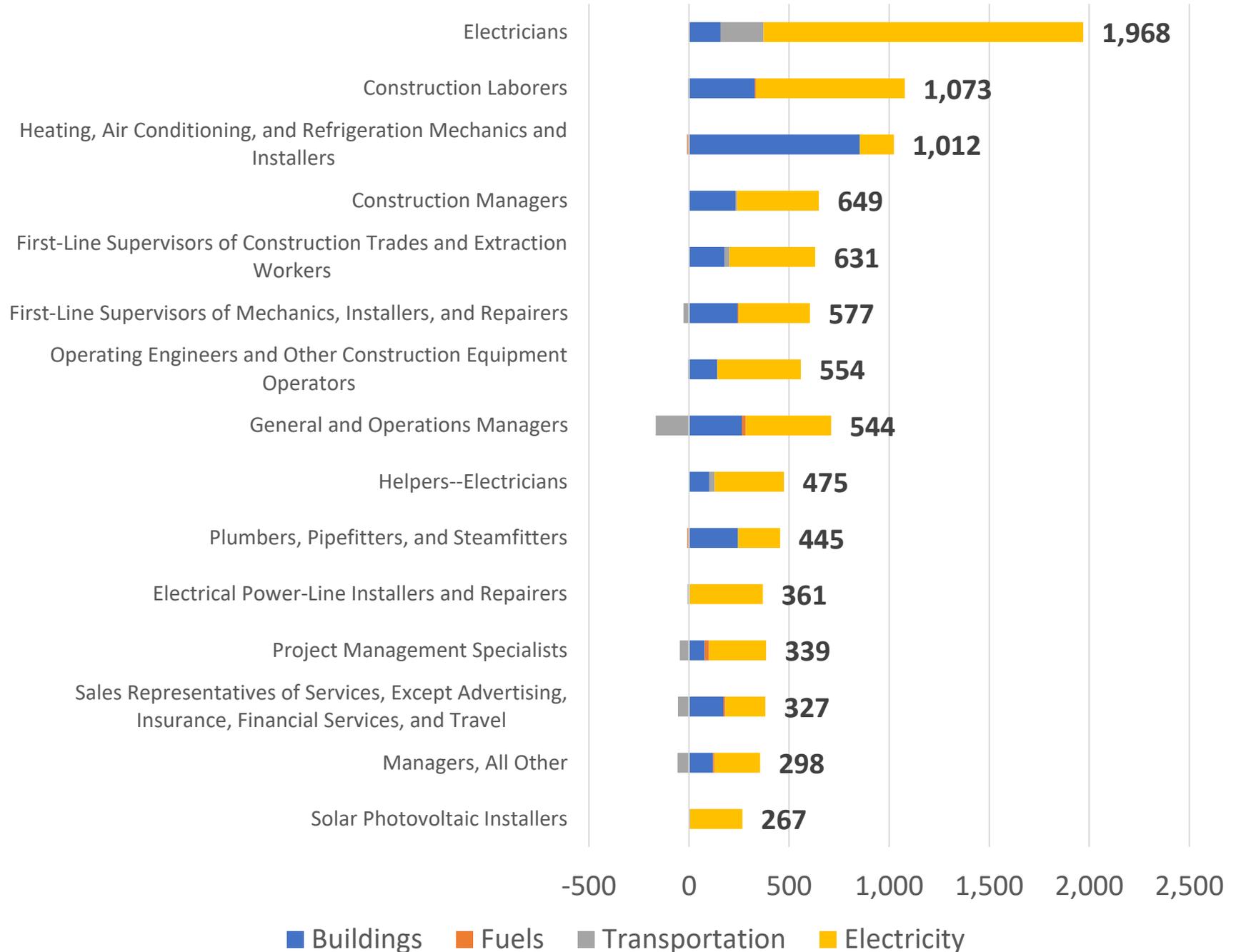
**Part 4:
SEOs Key Findings**

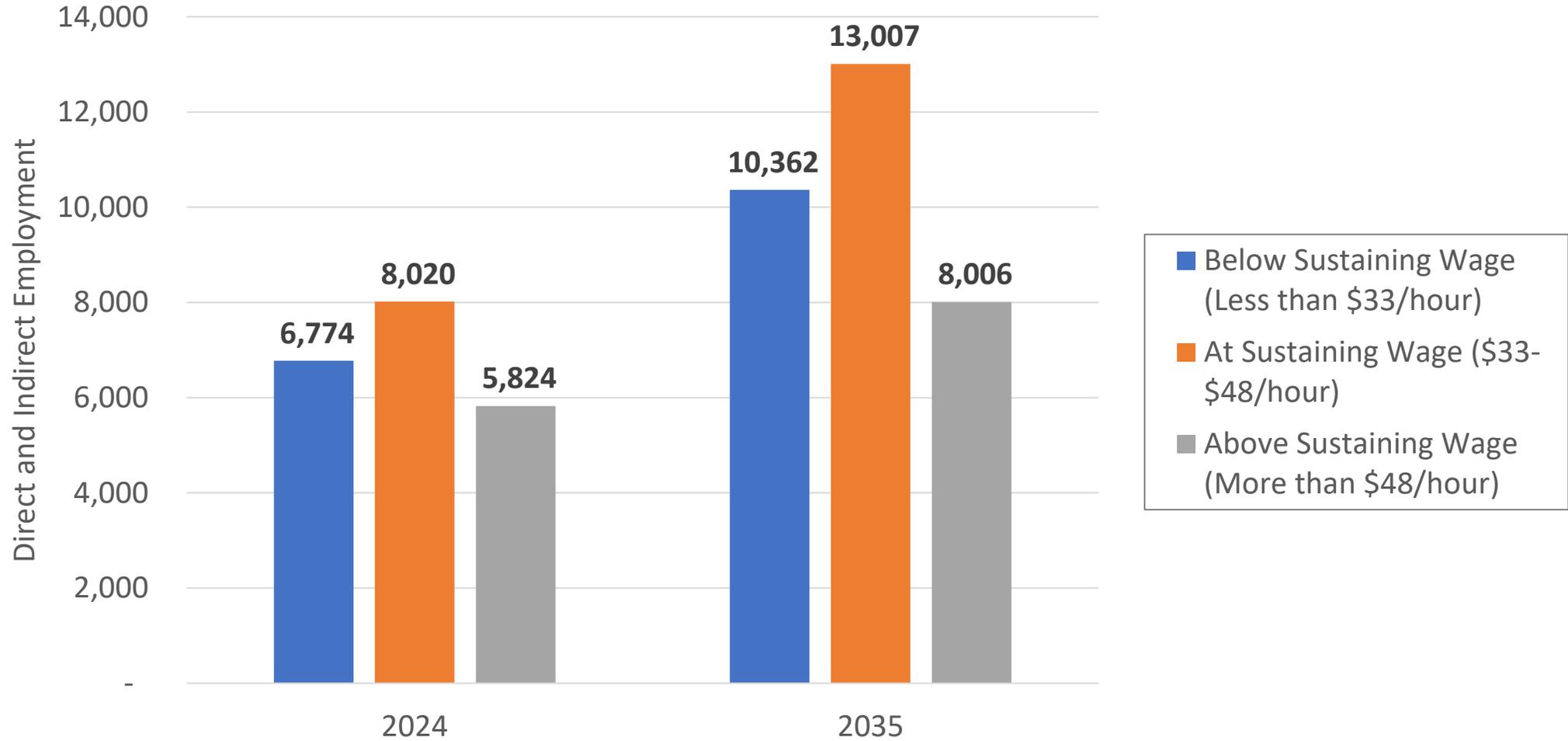
Top 15 Occupations by Demand in 2035 by Sector Oregon

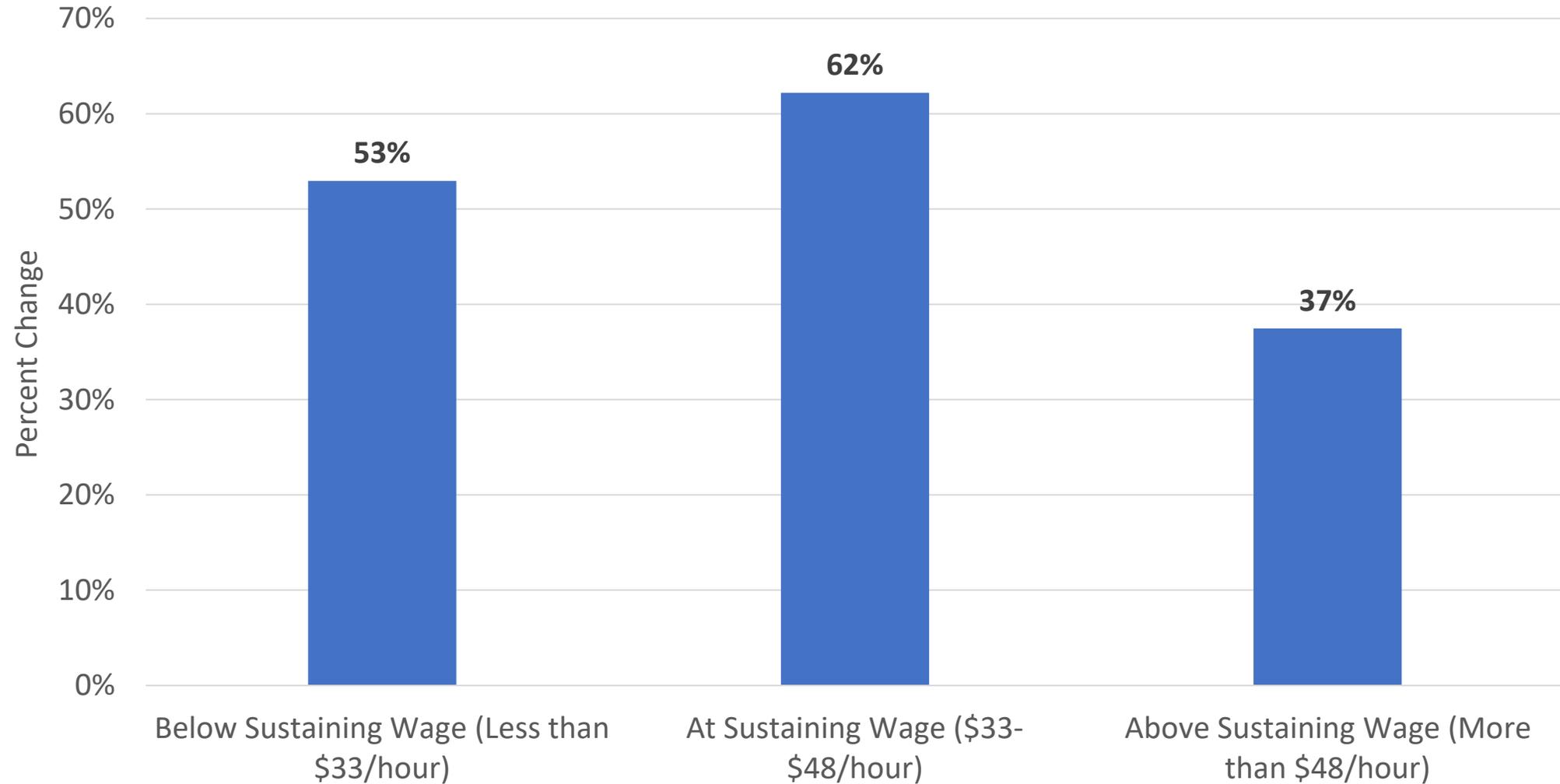
SOC Code	Occupation Title	Buildings Net New Jobs by 2035	Fuels Net New Jobs by 2035	Transportation Net New Jobs by 2035	Electricity Net New Jobs by 2035	Total New Jobs by 2035	Current Energy Sector Employment	Percent Growth Over Current Energy Sector Employment
47-2111	Electricians	158	-3	214	1,598	1,968	3,086	64%
47-2061	Construction Laborers	330	5	-5	744	1,073	2,774	39%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	854	-8	-3	170	1,012	4,373	23%
11-9021	Construction Managers	232	2	6	408	649	1,828	35%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	178	0	24	429	631	1,531	41%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	243	4	-28	357	577	2,267	25%
47-2073	Operating Engineers and Other Construction Equipment Operators	142	0	-4	417	554	1,298	43%
11-1021	General and Operations Managers	265	19	-166	427	544	4,160	13%
47-3013	Helpers--Electricians	100	0	27	347	475	122	390%
47-2152	Plumbers, Pipefitters, and Steamfitters	245	-8	-2	210	445	2,478	18%
49-9051	Electrical Power-Line Installers and Repairers	0	-3	-5	369	361	1,034	35%
13-1082	Project Management Specialists	78	21	-46	286	339	1,559	22%
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	173	9	-55	200	327	1,859	18%
11-9199	Managers, All Other	120	8	-58	227	298	1,632	18%
47-2231	Solar Photovoltaic Installers	0	0	4	262	267	302	88%

Oregon Energy Strategy

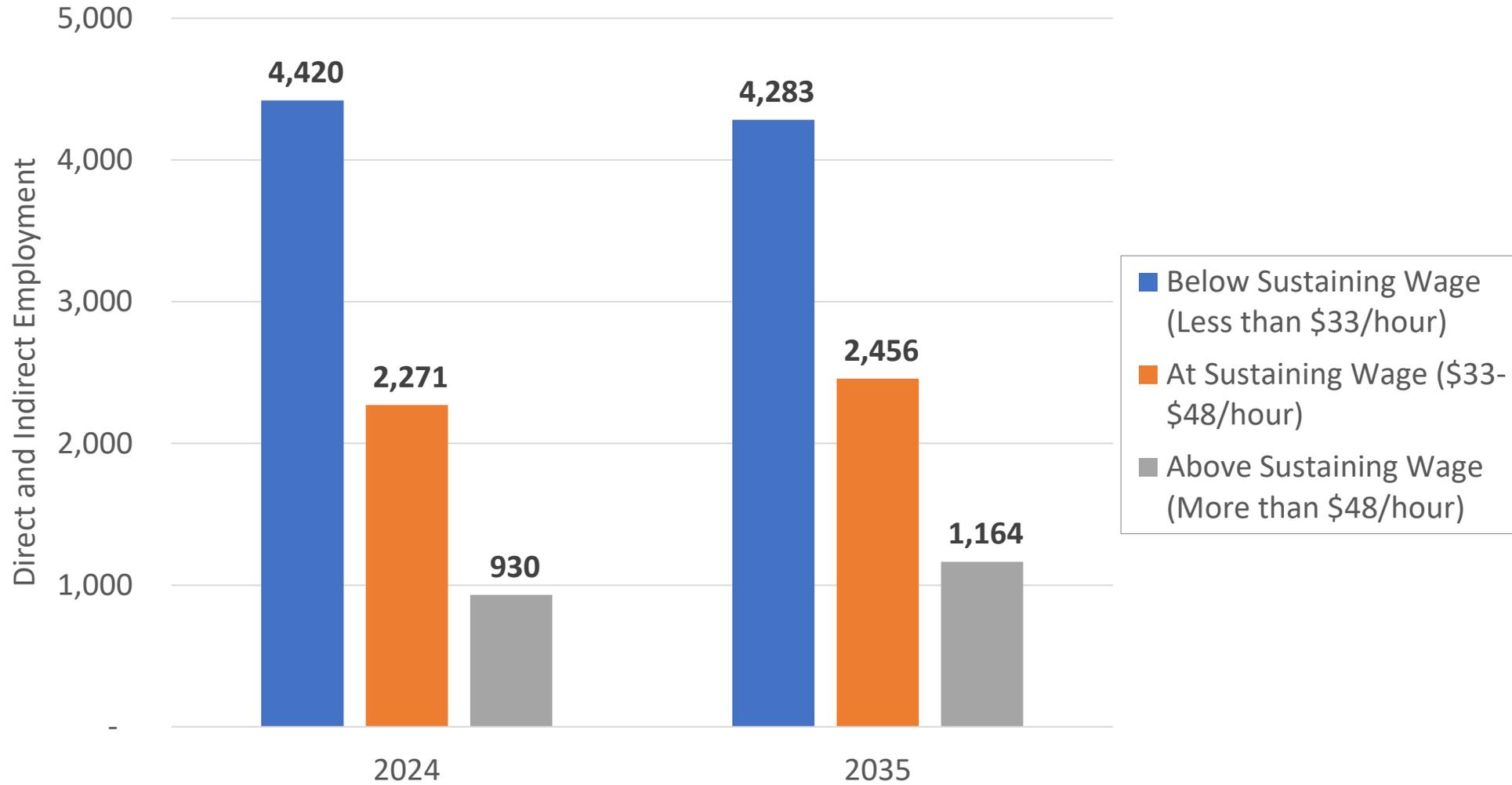
Part 4: SEOs Key Findings Top 15 Occupations by Demand in 2035 by Sector Oregon

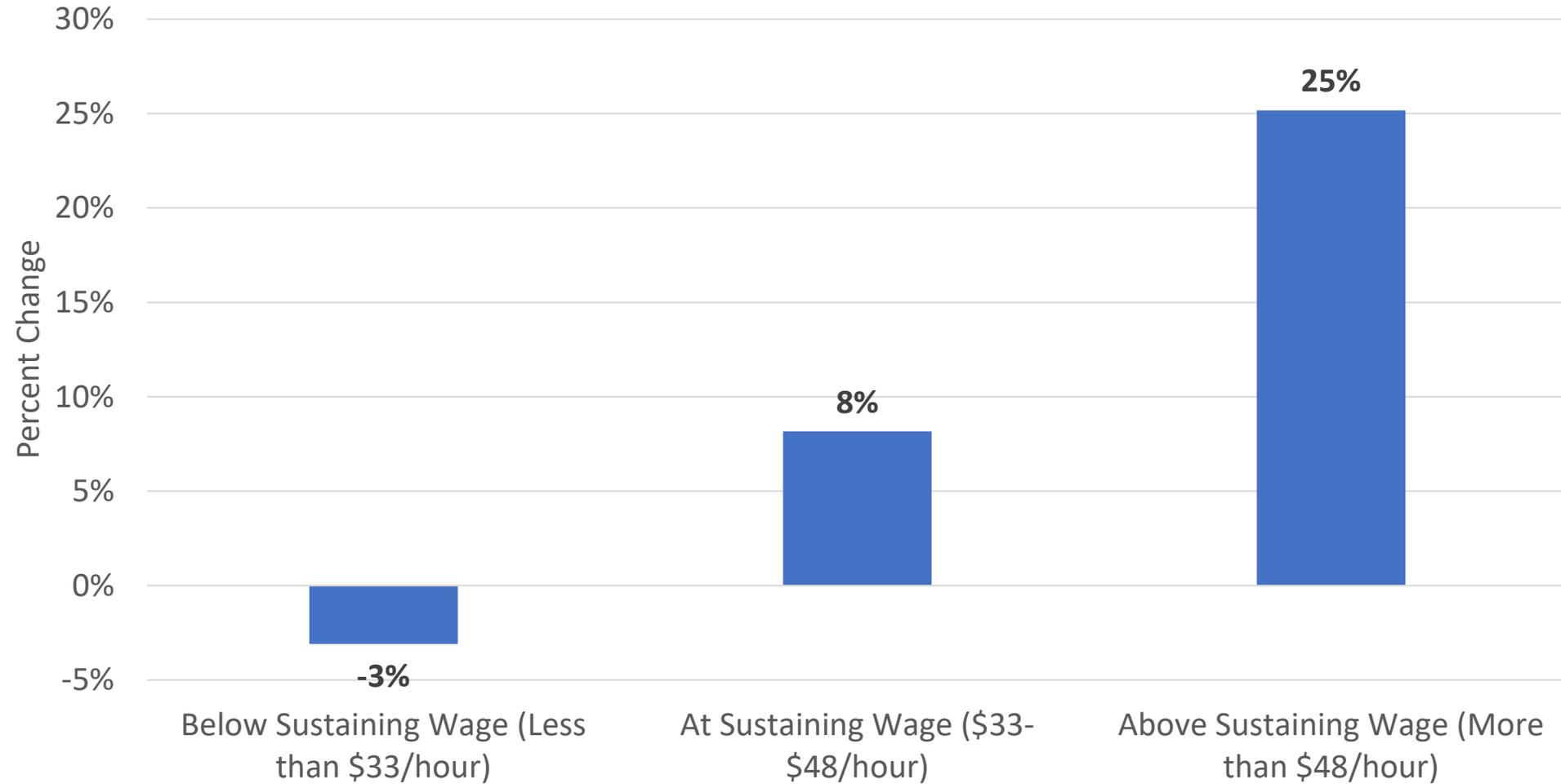


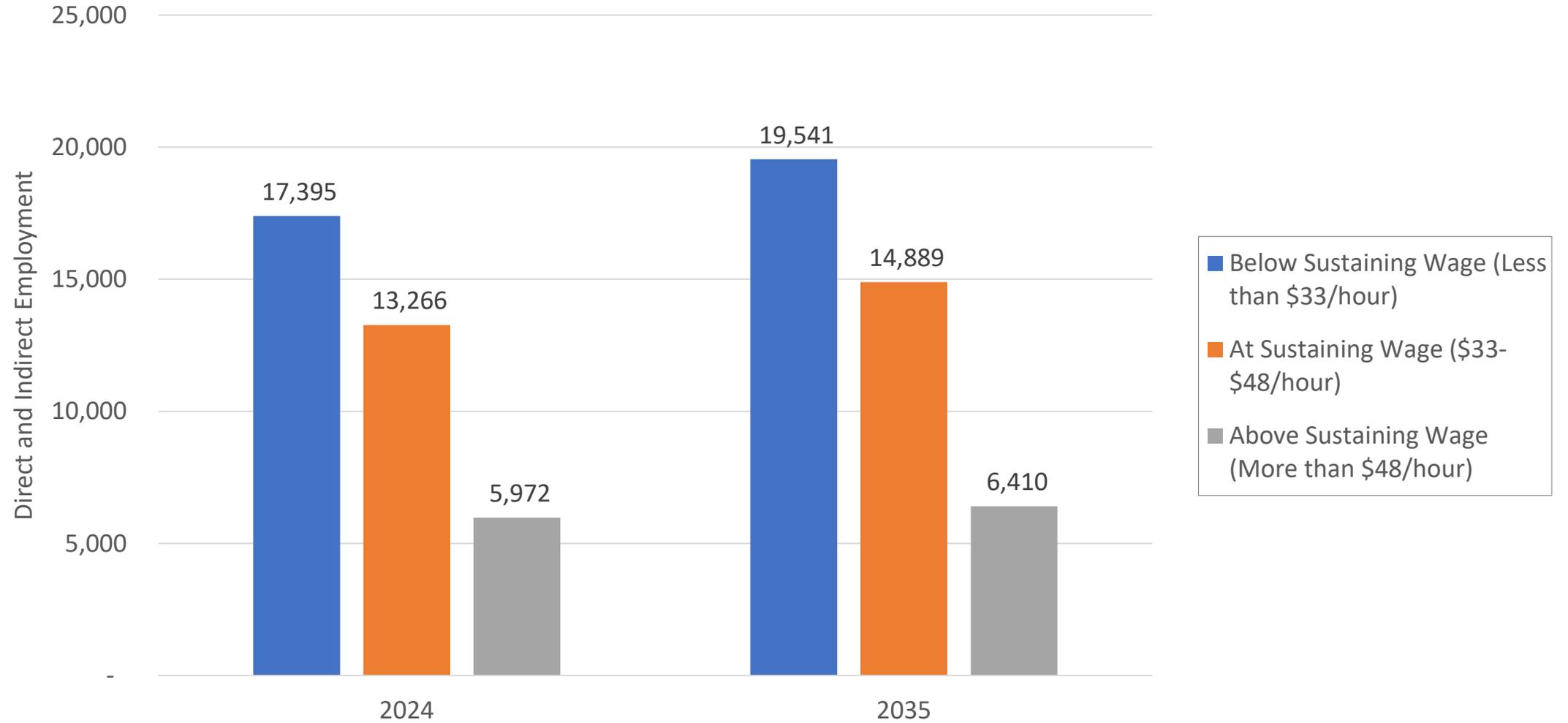
TOTAL EMPLOYMENT BY WAGE TIER – ELECTRICITY, OREGON

JOB QUALITY TIER CHANGE (2024-2035) – ELECTRICITY, OREGON

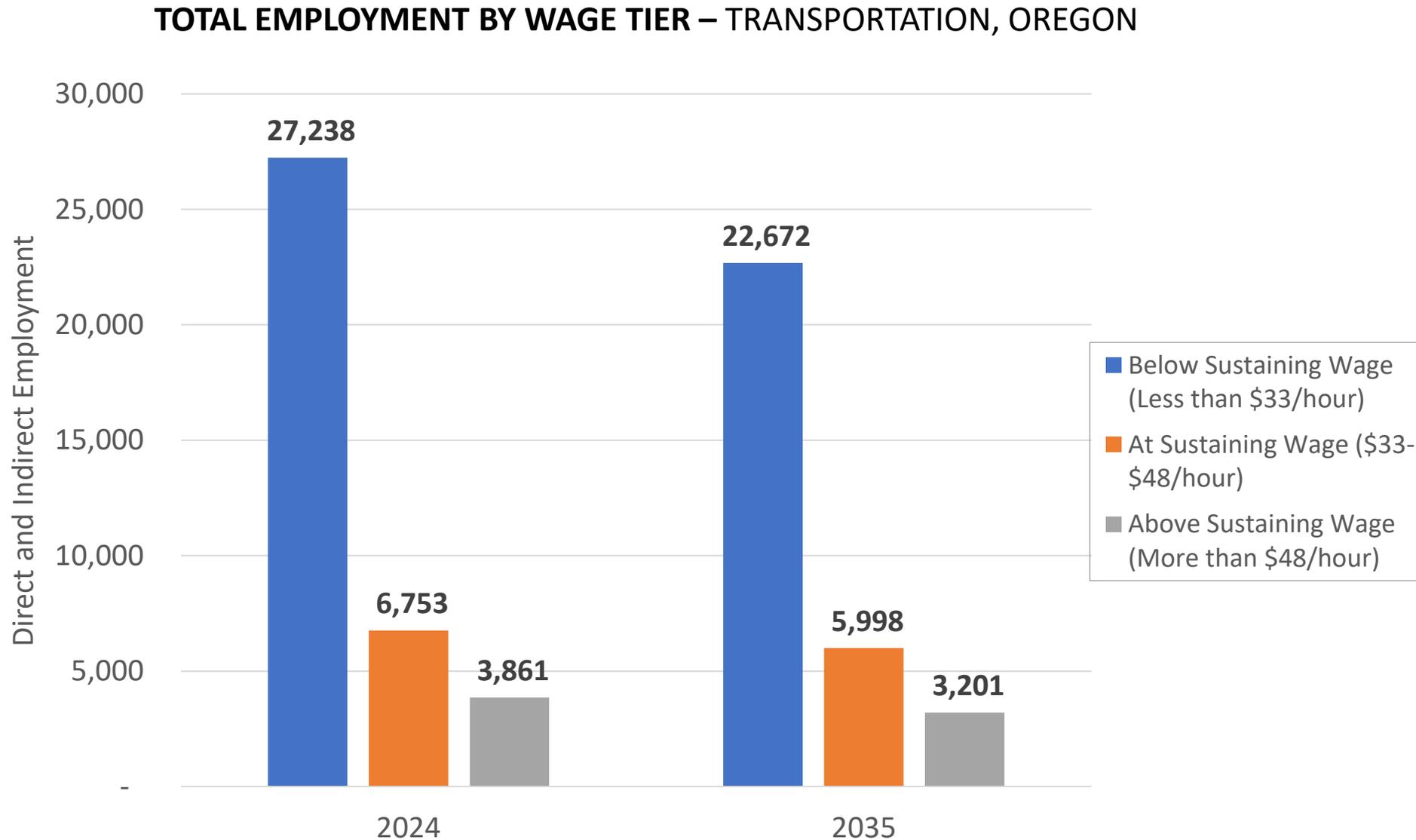
TOTAL EMPLOYMENT BY WAGE TIER – FUELS, OREGON



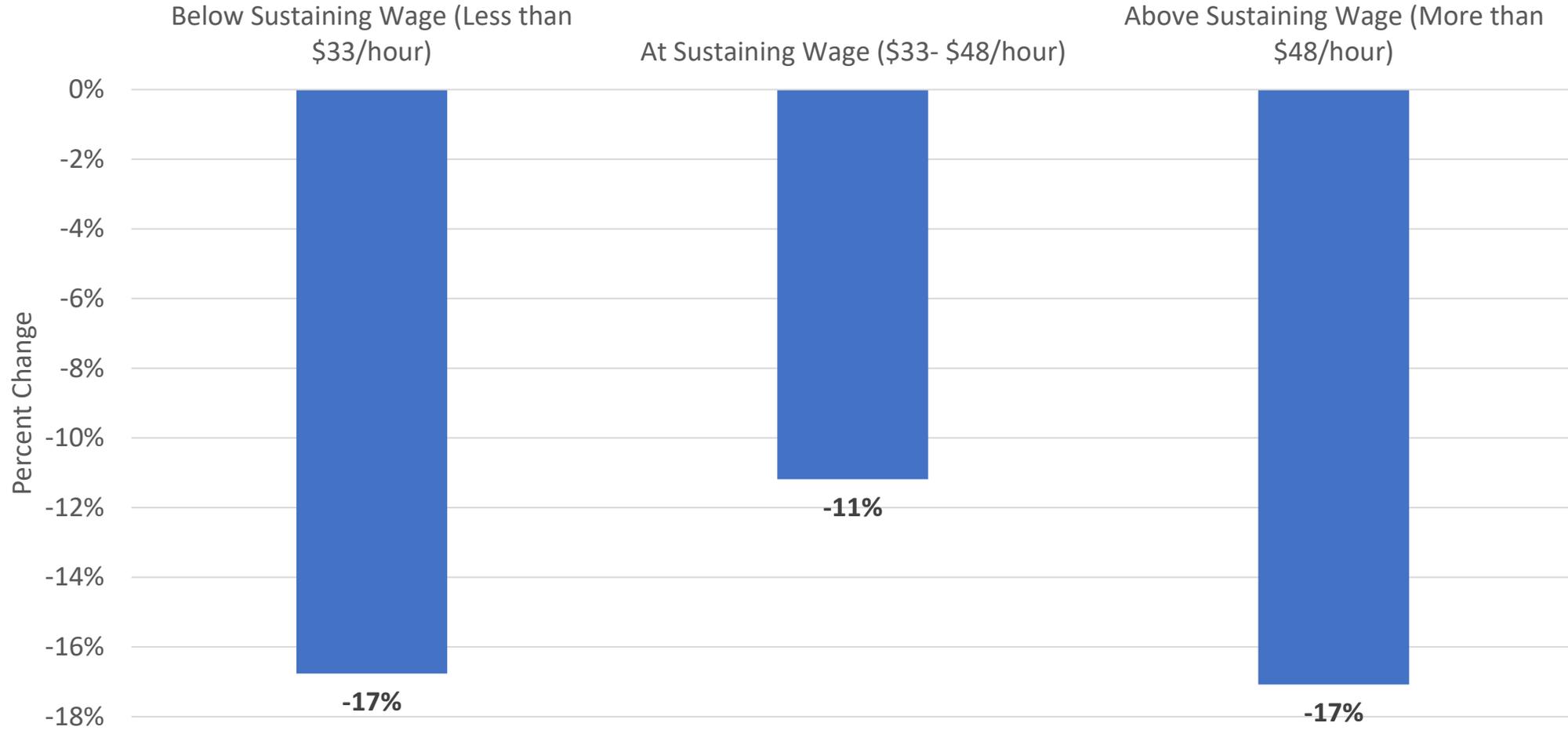
JOB QUALITY TIER CHANGE (2024-2035) – FUELS, OREGON

TOTAL EMPLOYMENT BY WAGE TIER – BUILDINGS, OREGON

JOB QUALITY TIER CHANGE (2024-2035) – BUILDINGS, OREGON



JOB QUALITY TIER CHANGE (2024-2035) – TRANSPORTATION, OREGON





Part 4.2

Reference Scenario Secondary Employment Outputs (SEOs) – East Oregon*

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

Oregon Energy Strategy

Part 4: SEOs Key Findings

Top 15 Occupations by Demand in 2035 by Sector

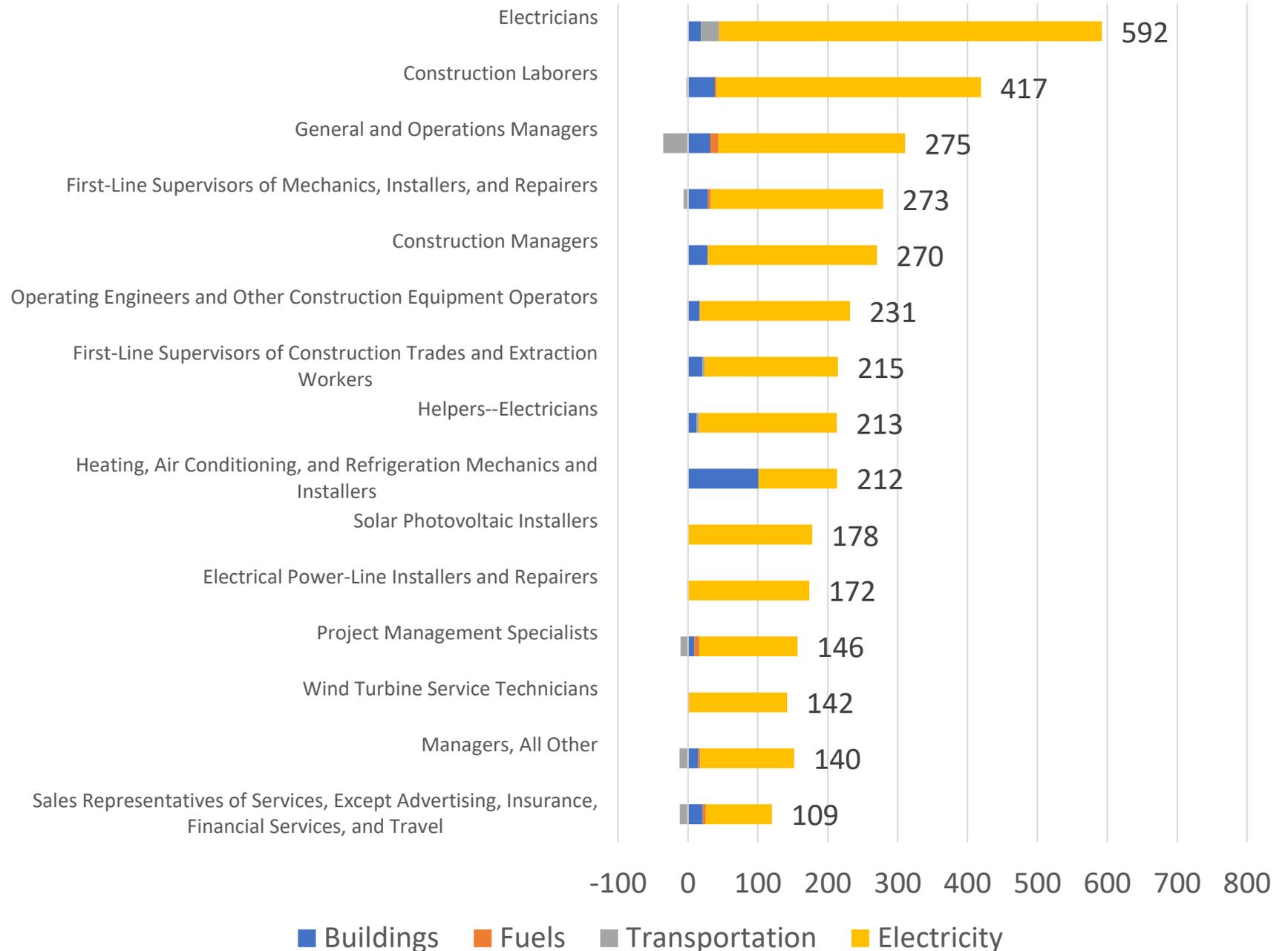
East Oregon

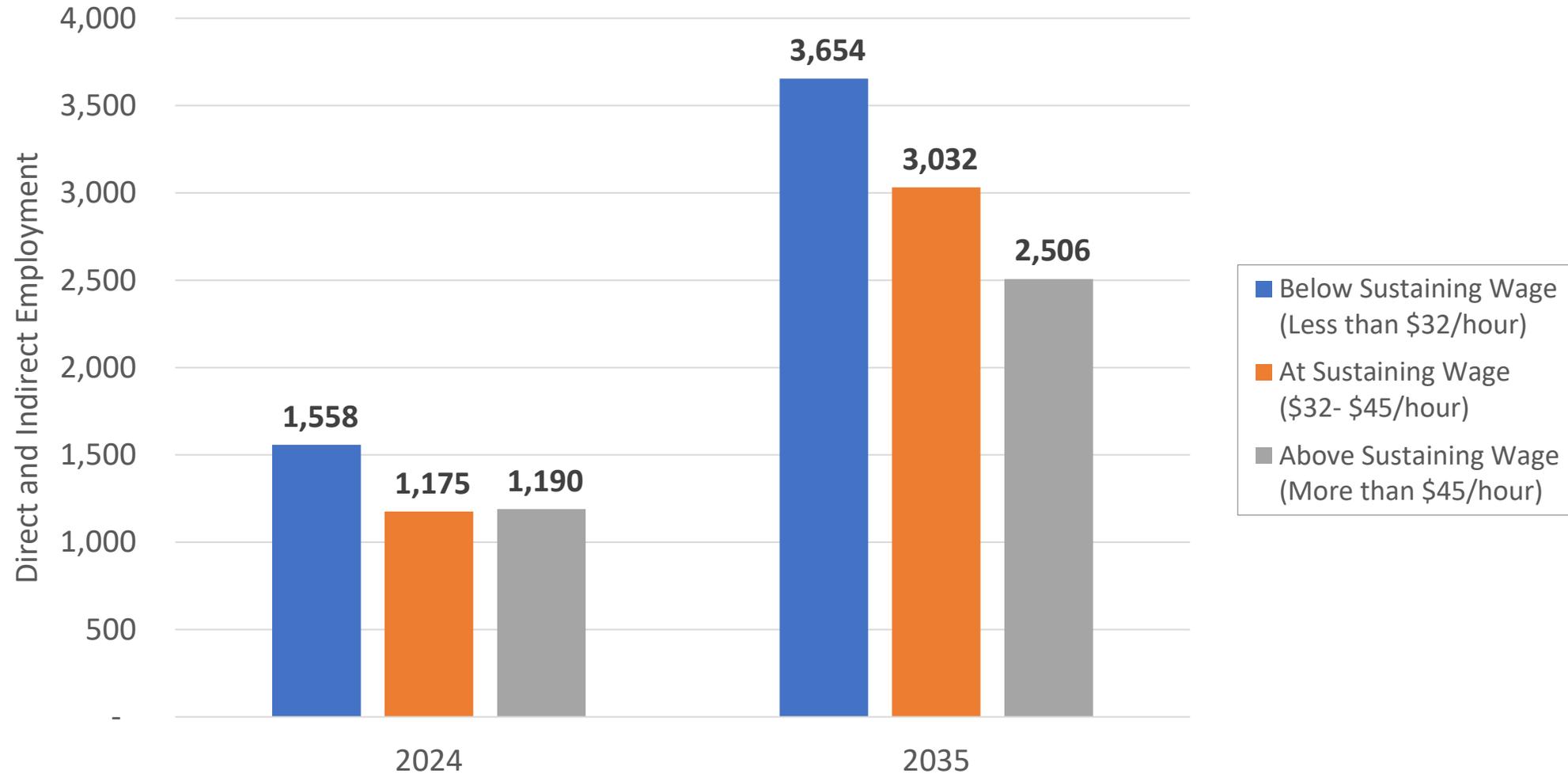
SOC Code	Occupation Title	Buildings Net New Jobs by 2035	Fuels Net New Jobs by 2035	Transportation Net New Jobs by 2035	Electricity Net New Jobs by 2035	Total New Jobs by 2035	Current Energy Sector Employment	Percent Growth Over Current Energy Sector Employment
47-2111	Electricians	19	0	26	548	592	419	141%
47-2061	Construction Laborers	38	2	-2	379	417	327	128%
11-1021	General and Operations Managers	32	12	-36	267	275	567	49%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	28	4	-6	247	273	283	96%
11-9021	Construction Managers	28	1	0	241	270	206	131%
47-2073	Operating Engineers and Other Construction Equipment Operators	17	1	-1	214	231	158	146%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	21	1	2	191	215	178	120%
47-3013	Helpers--Electricians	12	0	3	198	213	15	1455%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	100	1	-1	112	212	412	52%
47-2231	Solar Photovoltaic Installers	0	0	0	177	178	63	281%
49-9051	Electrical Power-Line Installers and Repairers	0	0	-1	174	172	190	90%
13-1082	Project Management Specialists	9	7	-11	141	146	217	67%
49-9081	Wind Turbine Service Technicians	0	2	0	140	142	45	318%
11-9199	Managers, All Other	15	3	-12	134	140	231	61%
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	21	4	-12	95	109	237	46%

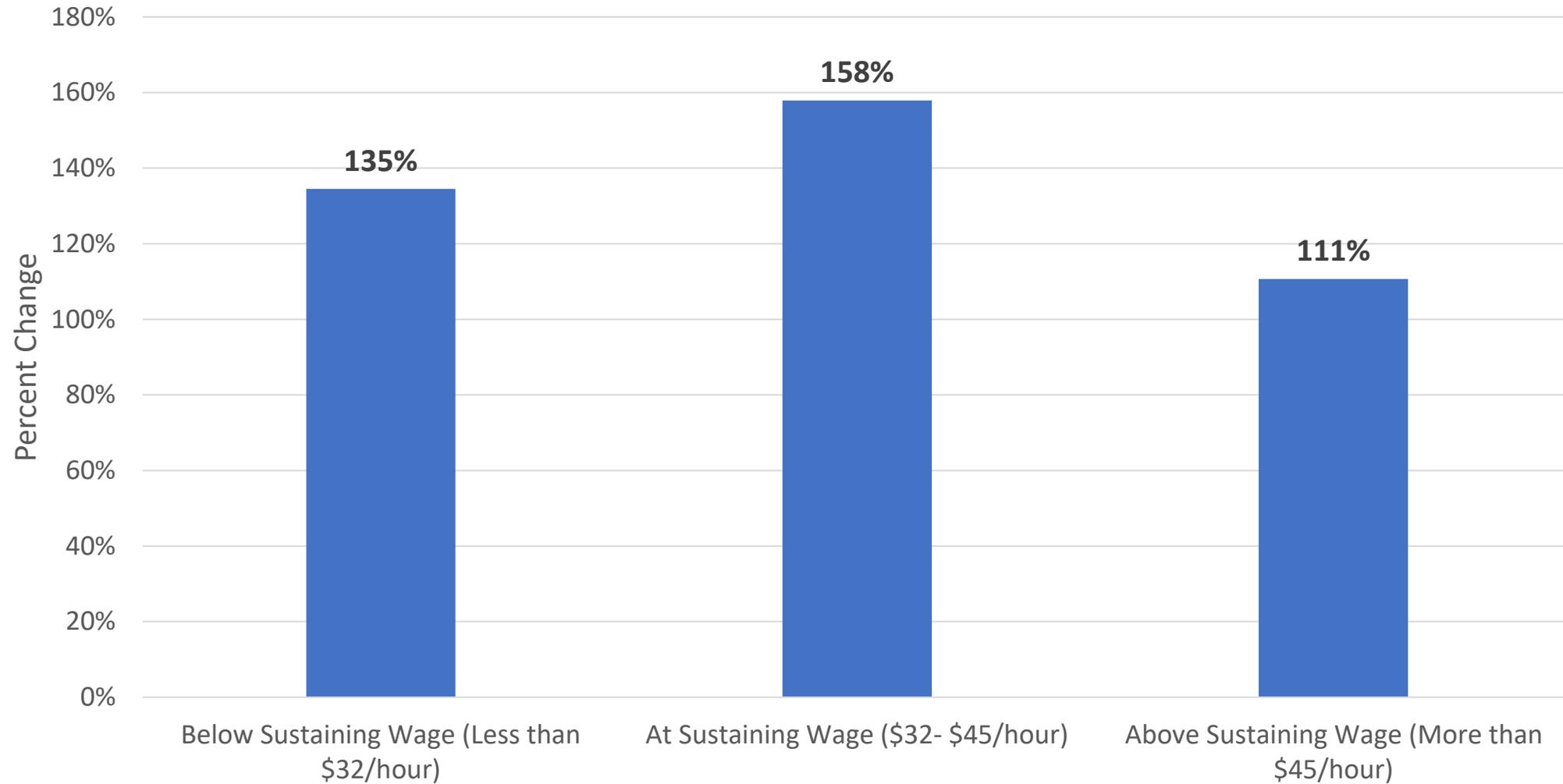
Oregon Energy Strategy

Part 4: SEOs Key Findings Top 15 Occupations by Demand in 2035 by Sector

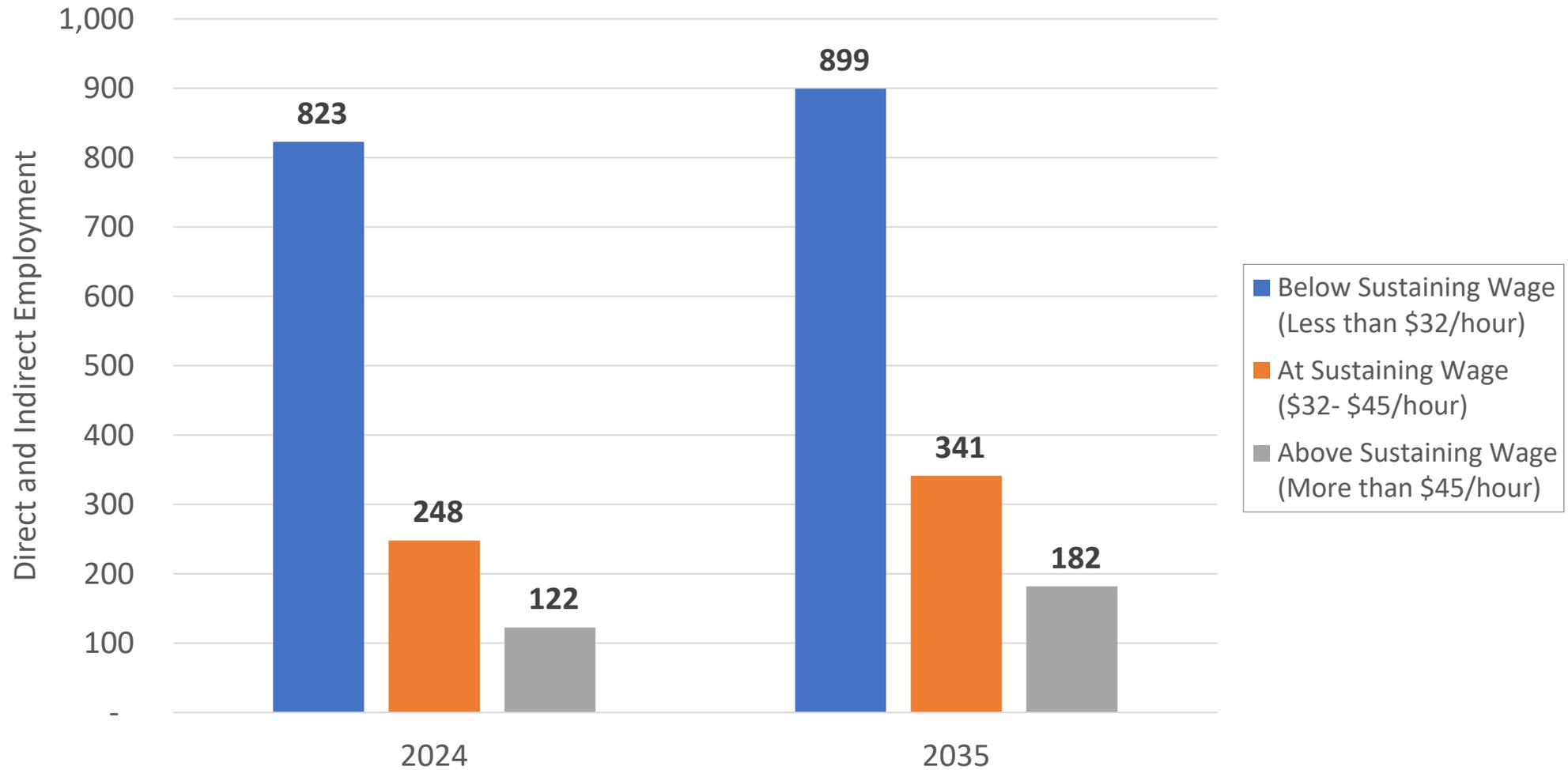
East Oregon

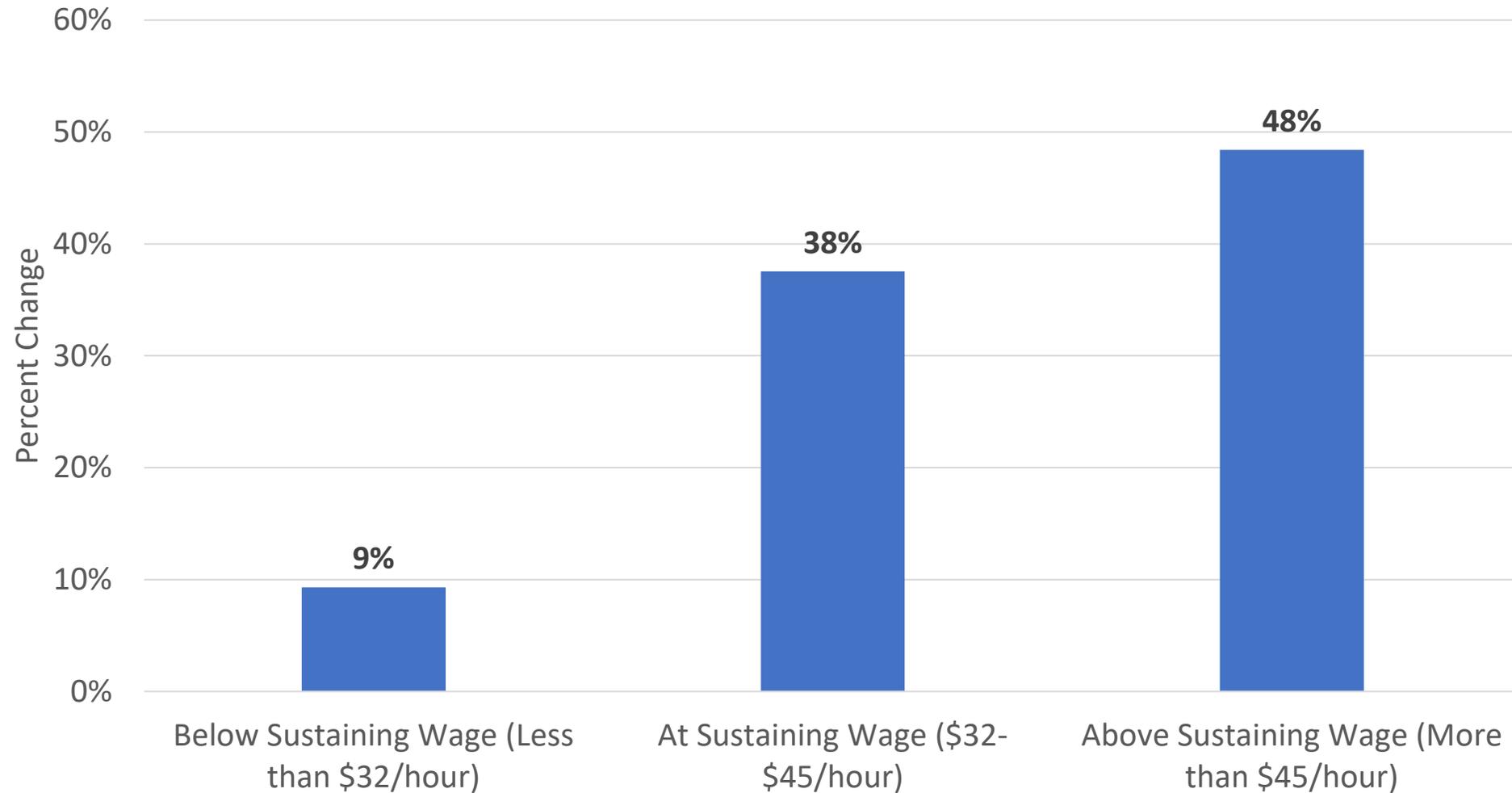


TOTAL EMPLOYMENT BY WAGE TIER – ELECTRICITY, EAST OREGON

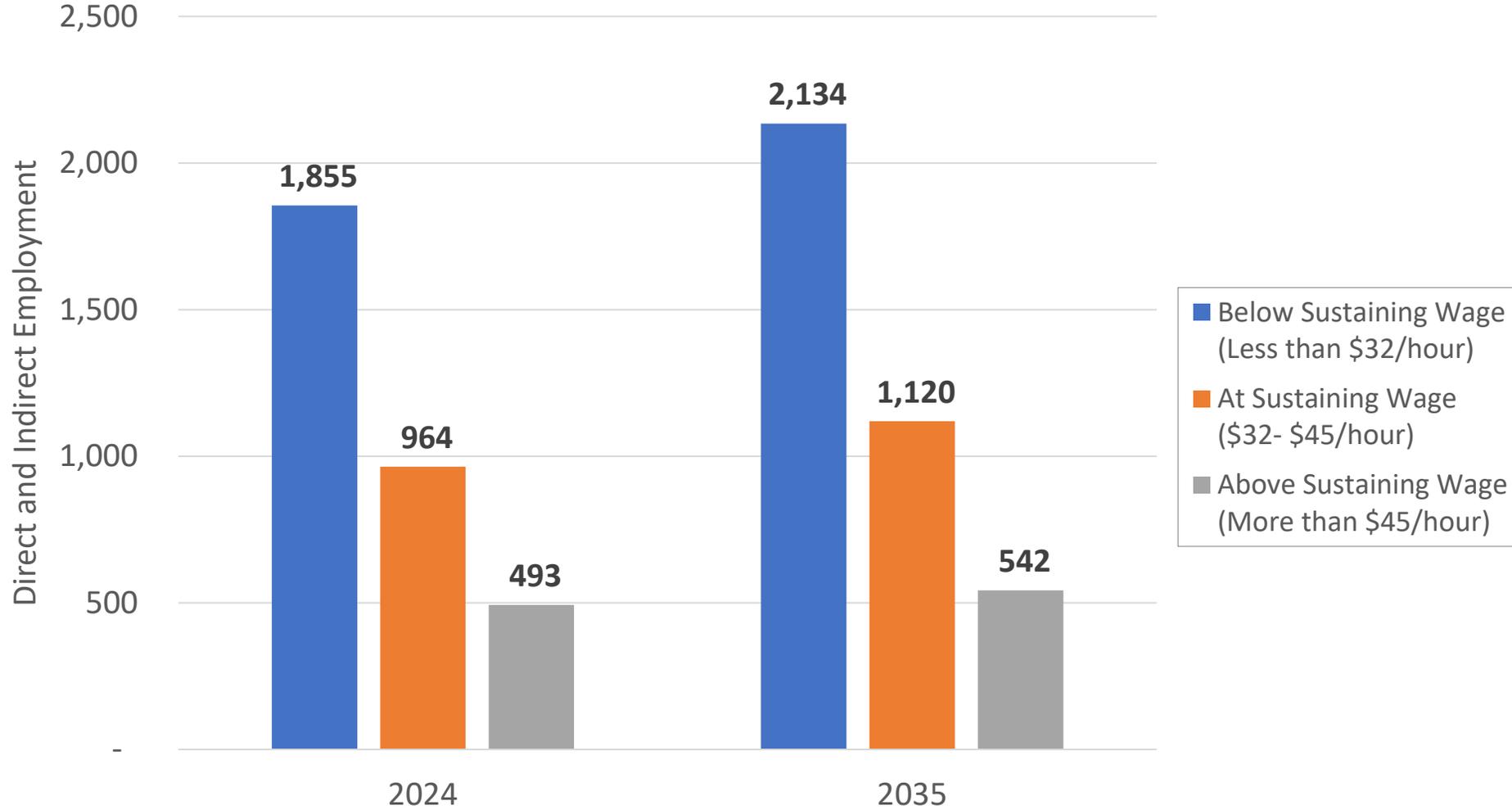
JOB QUALITY TIER CHANGE (2024-2035) – ELECTRICITY, EAST OREGON

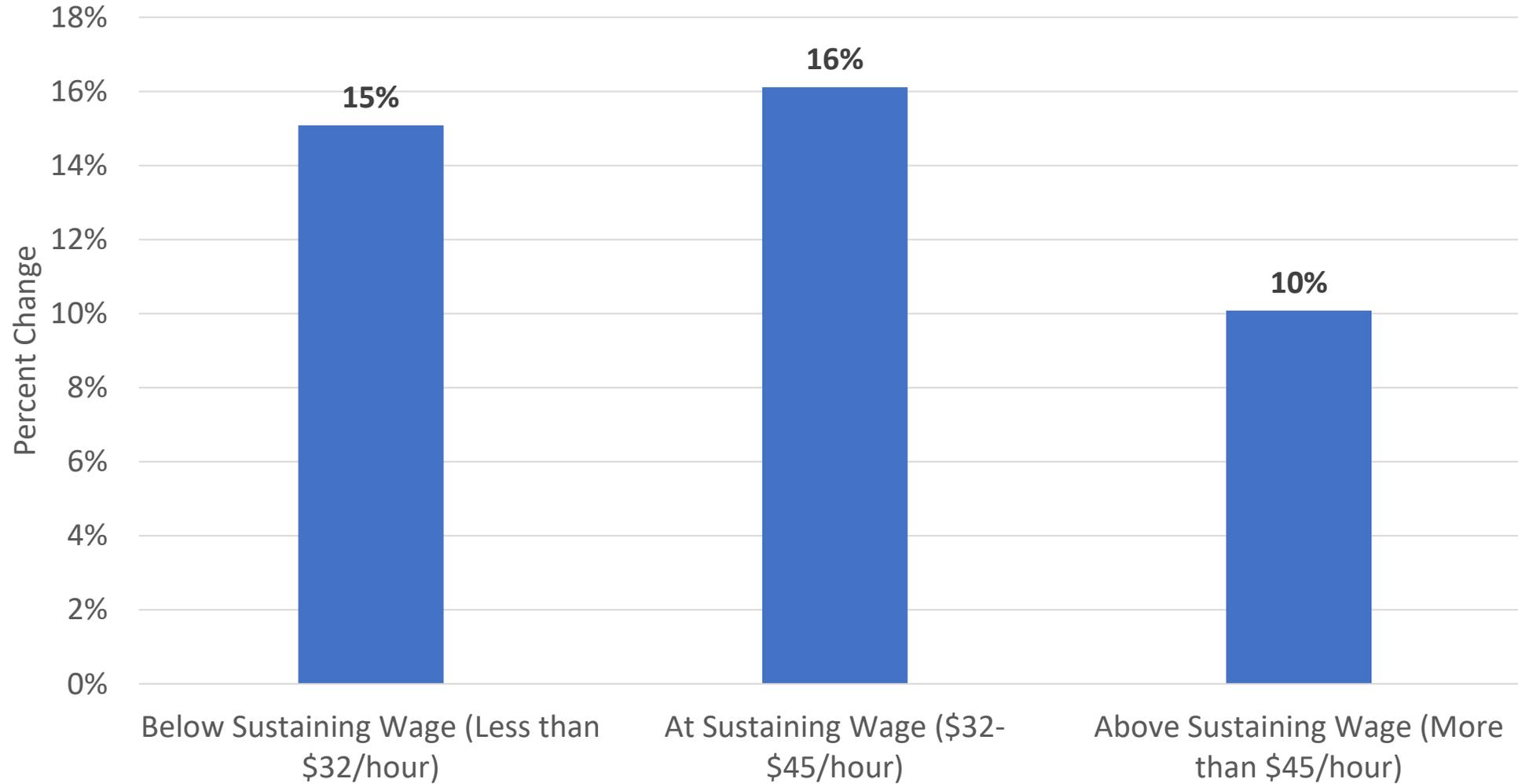
TOTAL EMPLOYMENT BY WAGE TIER – FUELS, EAST OREGON

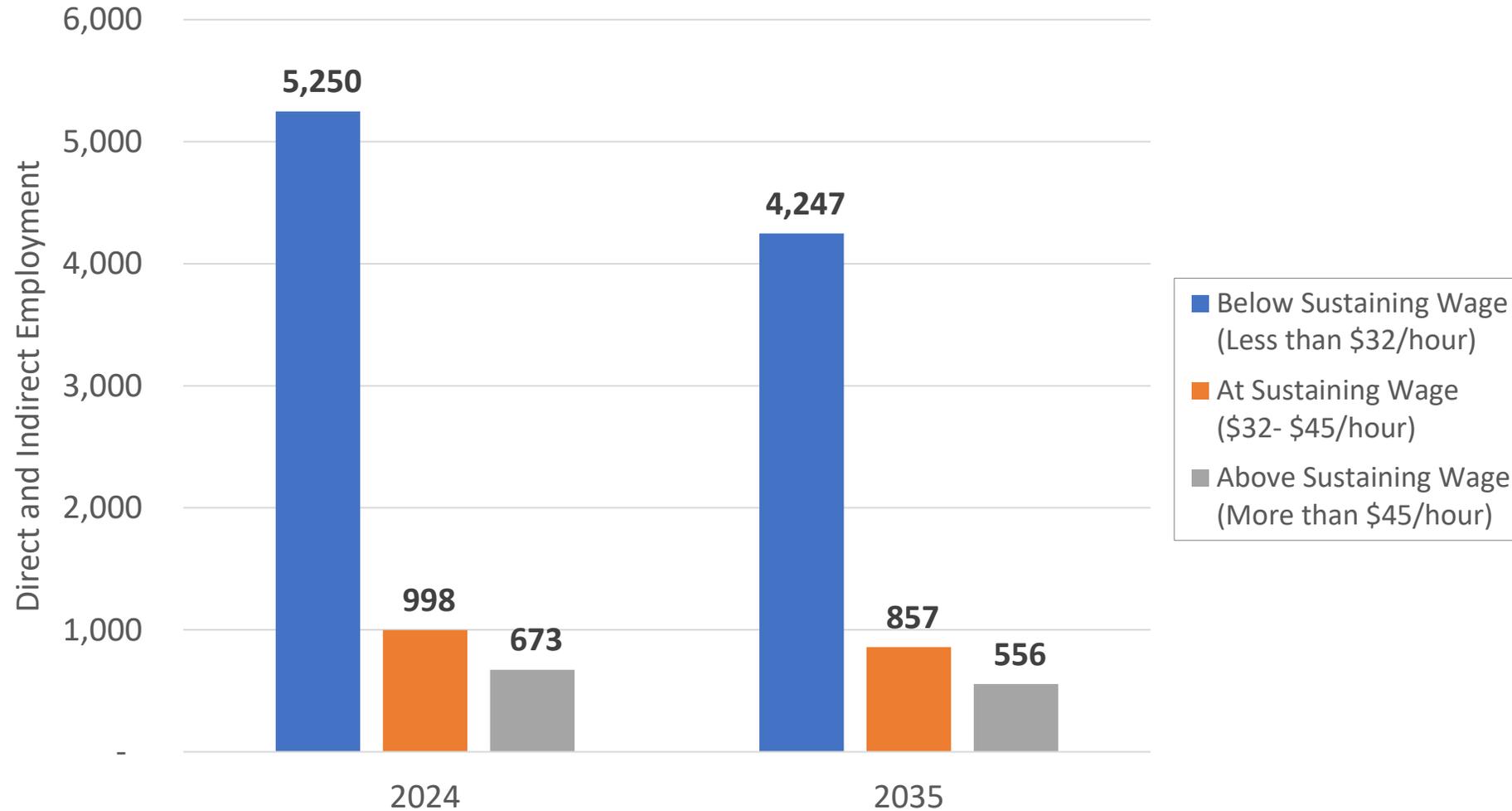


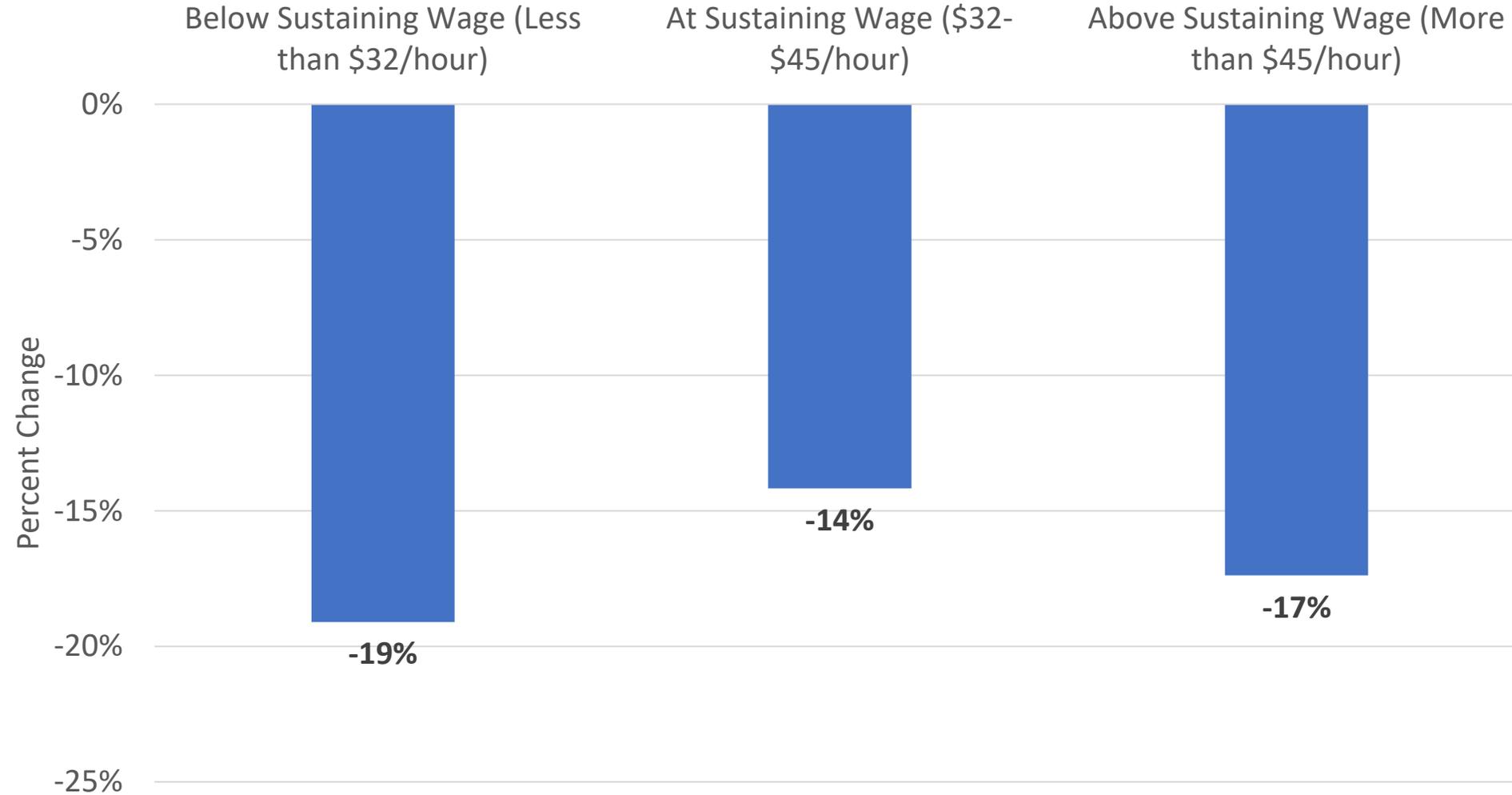
JOB QUALITY TIER CHANGE (2024-2035) – FUELS, EAST OREGON

TOTAL EMPLOYMENT BY WAGE TIER – BUILDINGS, EAST OREGON



JOB QUALITY TIER CHANGE (2024-2035) – BUILDINGS, EAST OREGON

TOTAL EMPLOYMENT BY WAGE TIER – TRANSPORTATION, EAST OREGON

JOB QUALITY TIER CHANGE (2024-2035) – TRANSPORTATION, EAST OREGON



Part 4.3

Reference Scenario Secondary Employment Outputs (SEOs) – West Oregon*

**EER modeled Oregon as two zones, separated by the Cascade Mountains, Referred to as East Oregon and West Oregon, to represent the need for transmission across the mountains.*

Oregon Energy Strategy

Part 4: SEOs Key Findings

Top 15 Occupations by Demand in 2035 by Sector

West Oregon

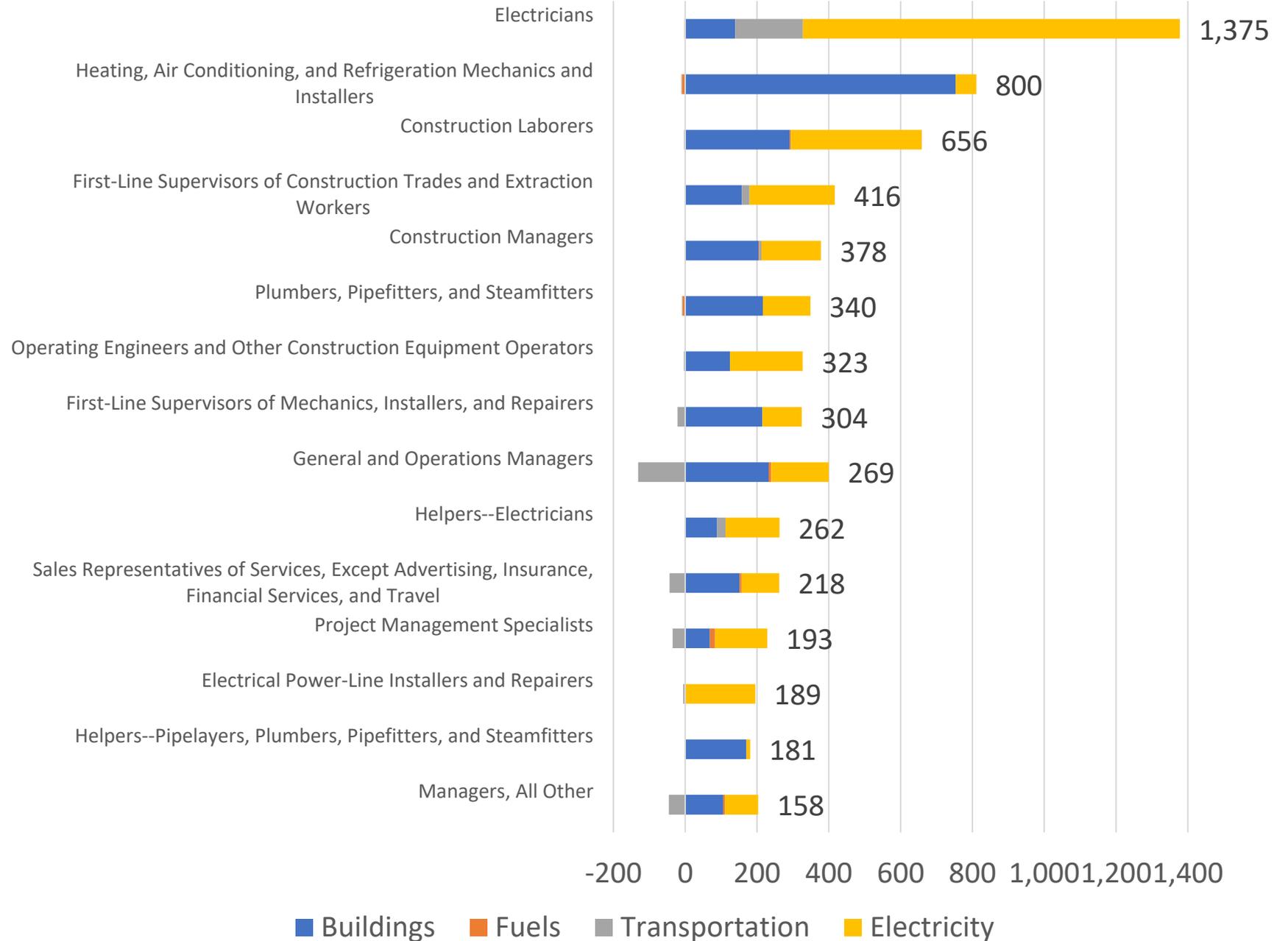
SOC Code	Occupation Title	Buildings Net New Jobs by 2035	Fuels Net New Jobs by 2035	Transportation Net New Jobs by 2035	Electricity Net New Jobs by 2035	Total New Jobs by 2035	Current Energy Sector Employment	Percent Growth Over Current Energy Sector Employment
47-2111	Electricians	139	-3	188	1,050	1,375	2,668	52%
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	753	-9	-2	58	800	3,961	20%
47-2061	Construction Laborers	291	3	-3	365	656	2,447	27%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	158	-1	21	238	416	1,352	31%
11-9021	Construction Managers	205	2	6	166	378	1,621	23%
47-2152	Plumbers, Pipefitters, and Steamfitters	216	-8	-1	133	340	2,230	15%
47-2073	Operating Engineers and Other Construction Equipment Operators	125	-1	-3	203	323	1,140	28%
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	214	0	-21	110	304	1,983	15%
11-1021	General and Operations Managers	233	7	-131	160	269	3,593	7%
47-3013	Helpers--Electricians	89	0	24	150	262	107	245%
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	152	5	-43	105	218	1,622	13%
13-1082	Project Management Specialists	69	14	-35	145	193	1,342	14%
49-9051	Electrical Power-Line Installers and Repairers	0	-2	-4	195	189	844	22%
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	170	0	0	11	181	116	156%
11-9199	Managers, All Other	106	5	-45	93	158	1,401	11%

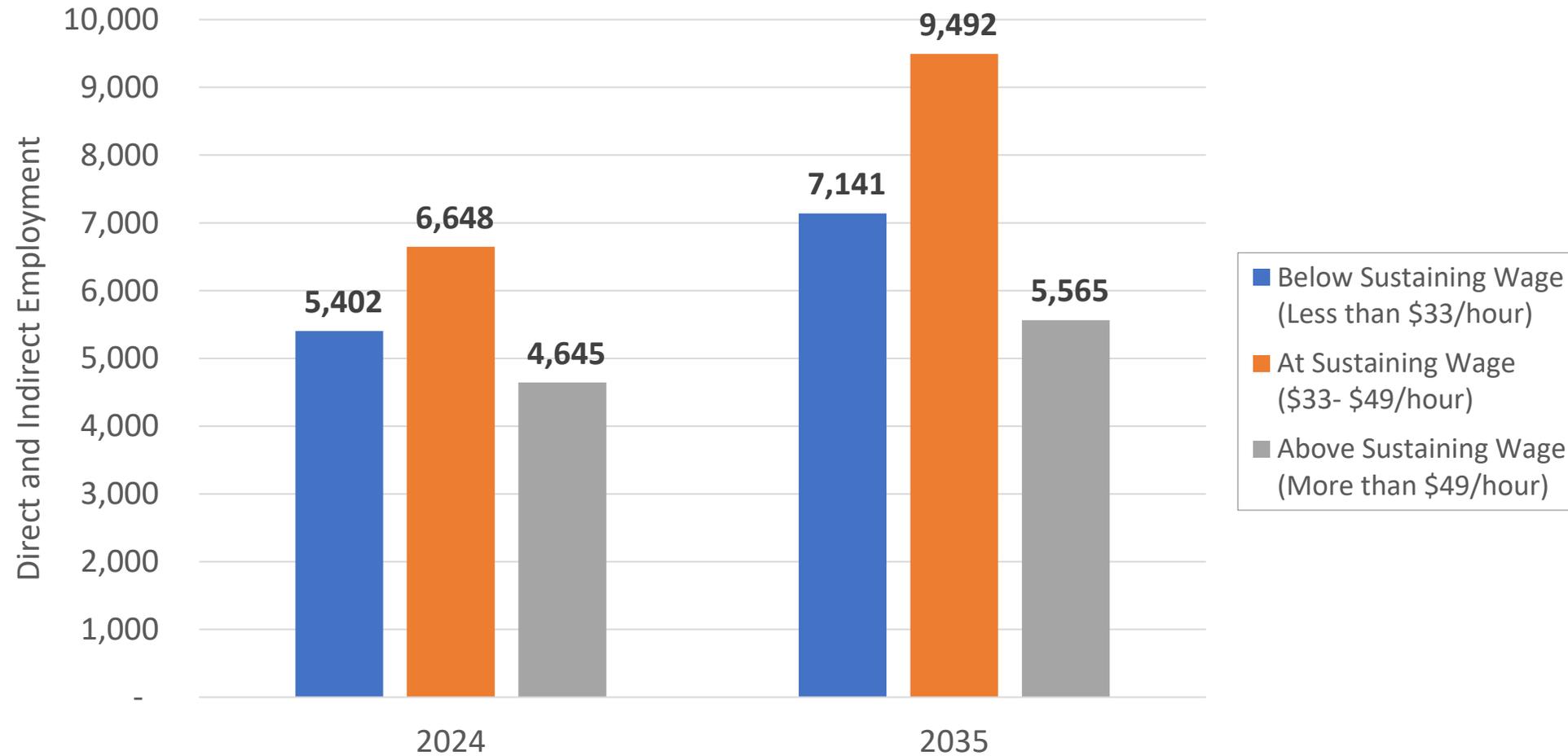
Oregon Energy Strategy

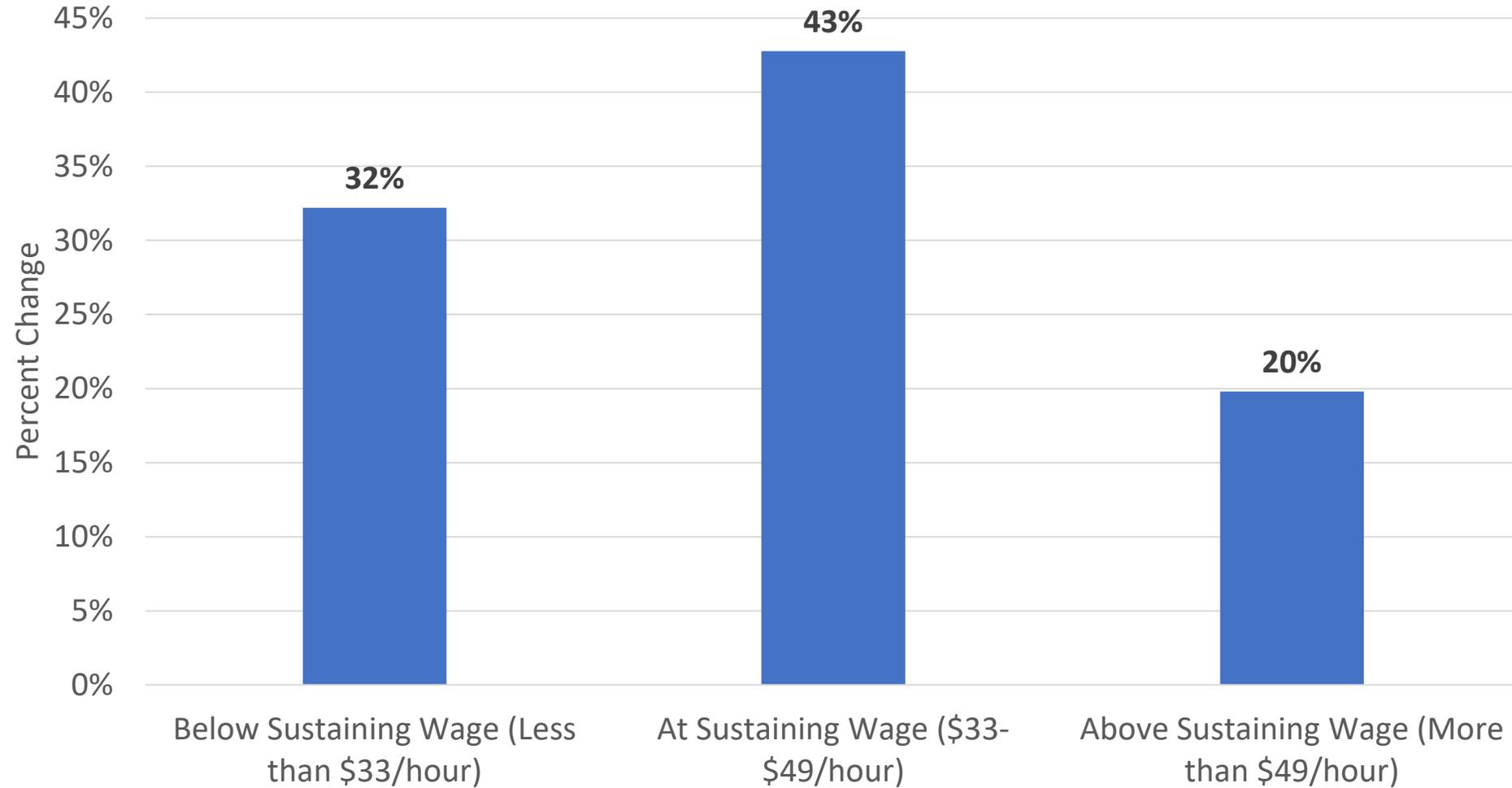
Part 4: SEOs Key Findings

Top 15 Occupations by Demand in 2035 by Sector

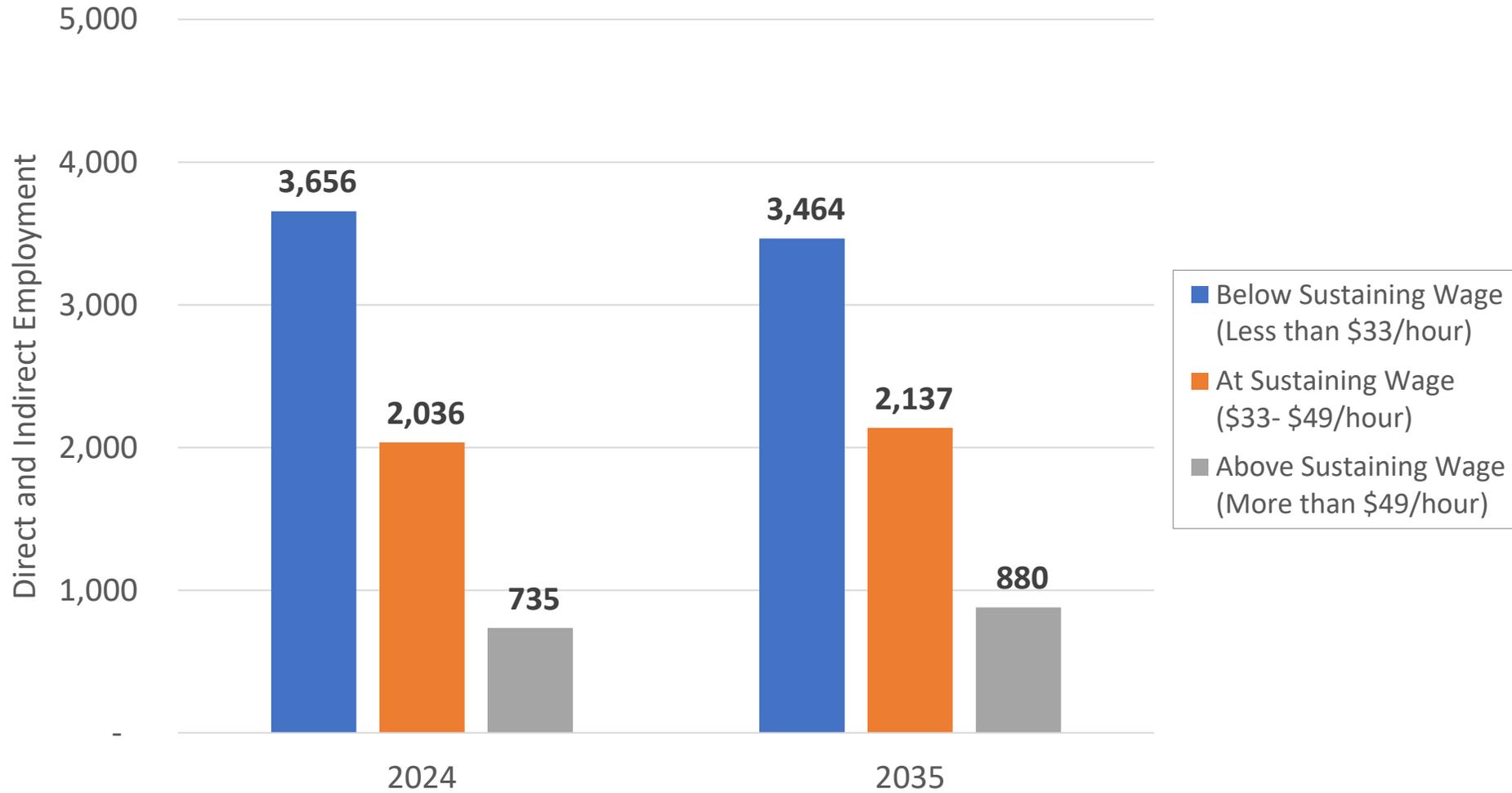
West Oregon



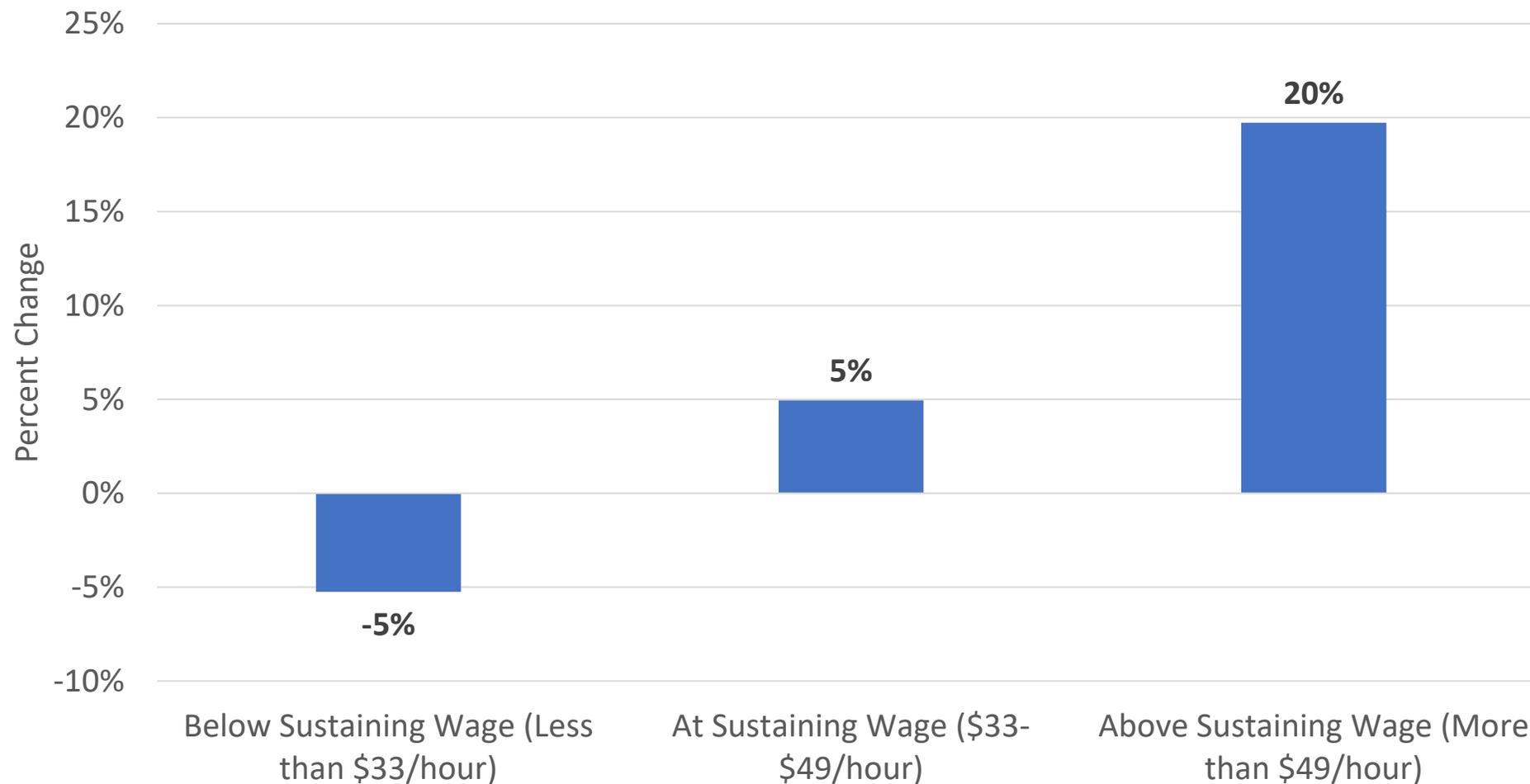
TOTAL EMPLOYMENT BY WAGE TIER – ELECTRICITY, WEST OREGON

JOB QUALITY TIER CHANGE (2024-2035) – ELECTRICITY, WEST OREGON

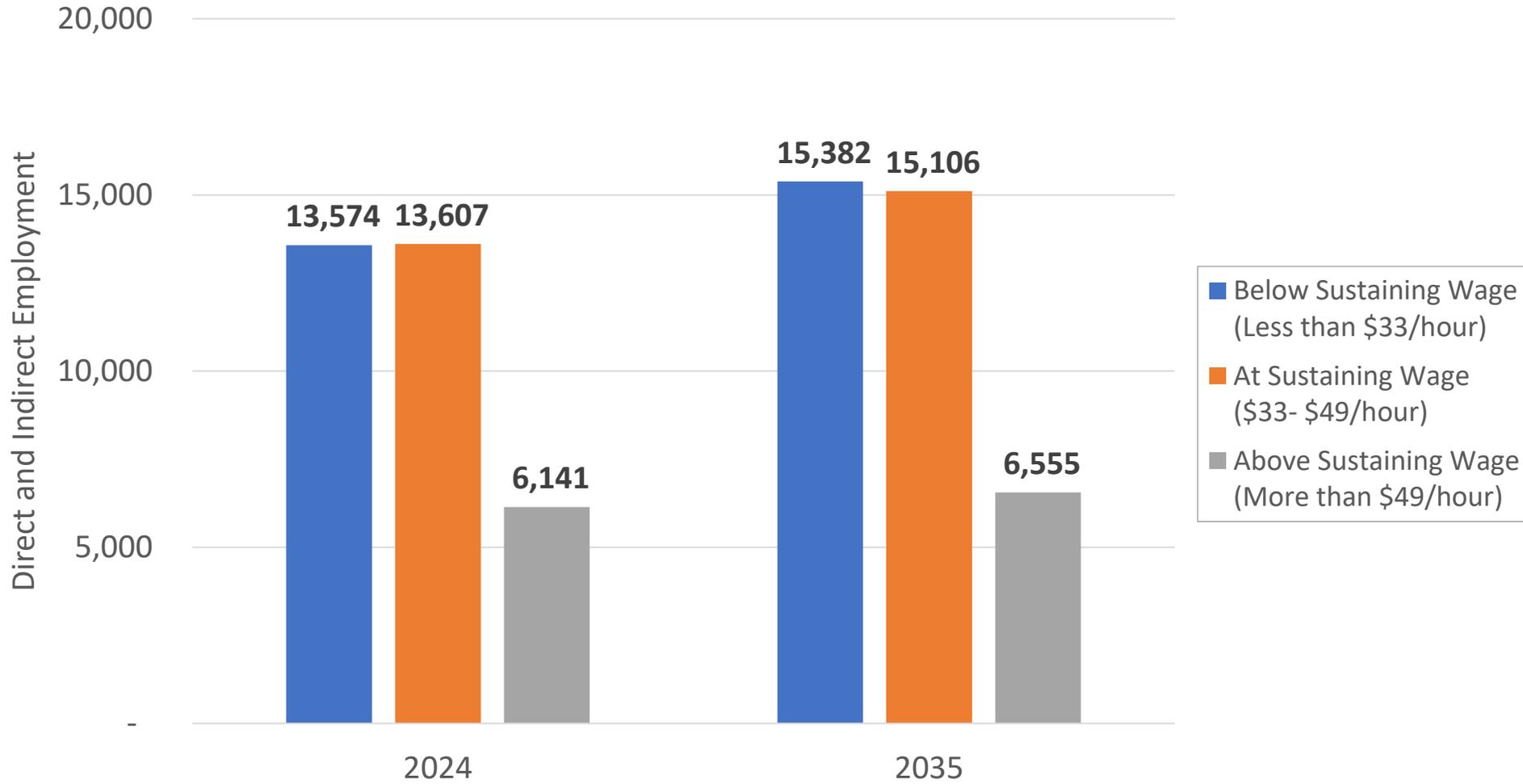
TOTAL EMPLOYMENT BY WAGE TIER – FUELS, WEST OREGON

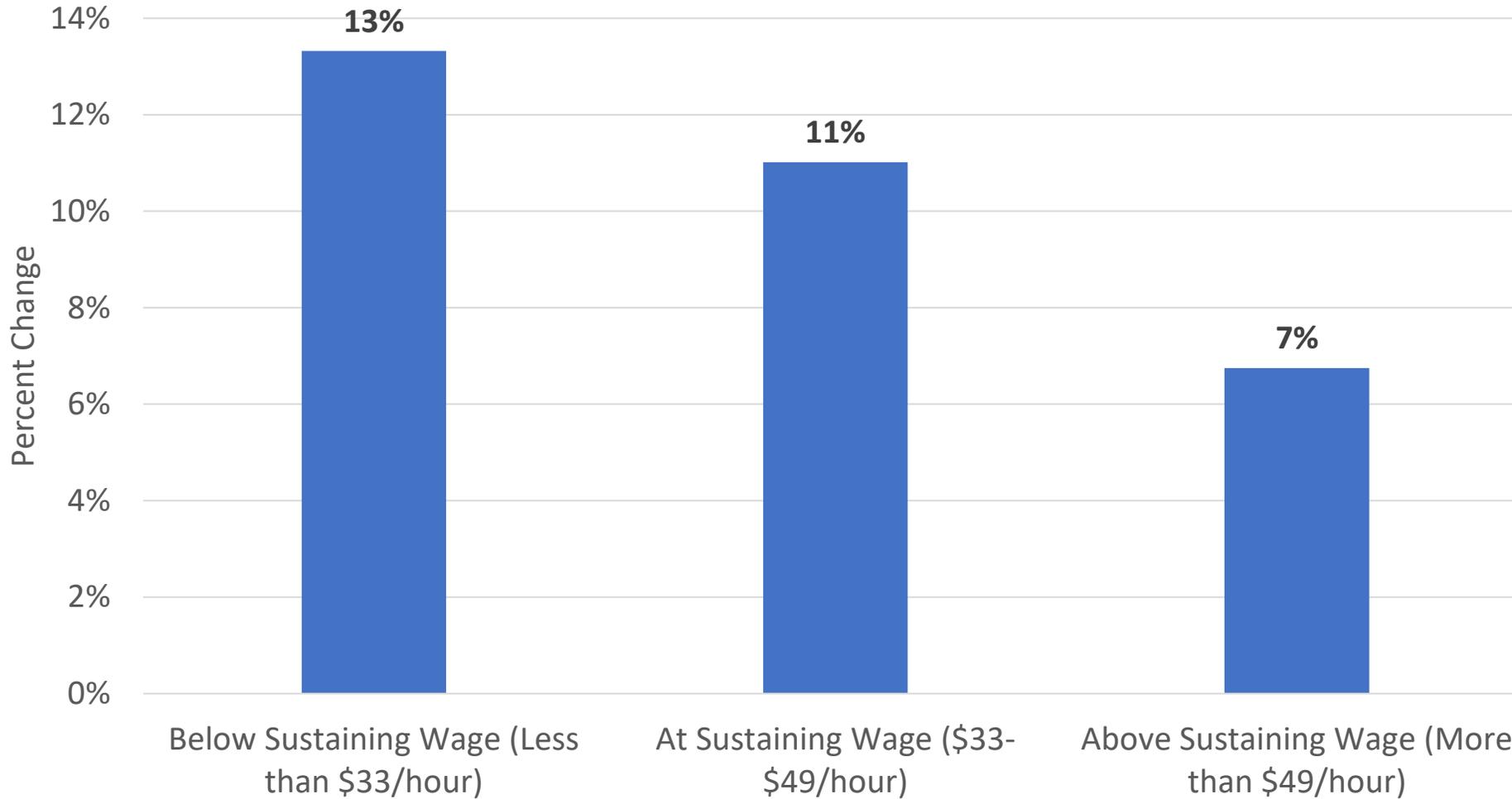


JOB QUALITY TIER CHANGE (2024-2035) – FUELS, WEST OREGON

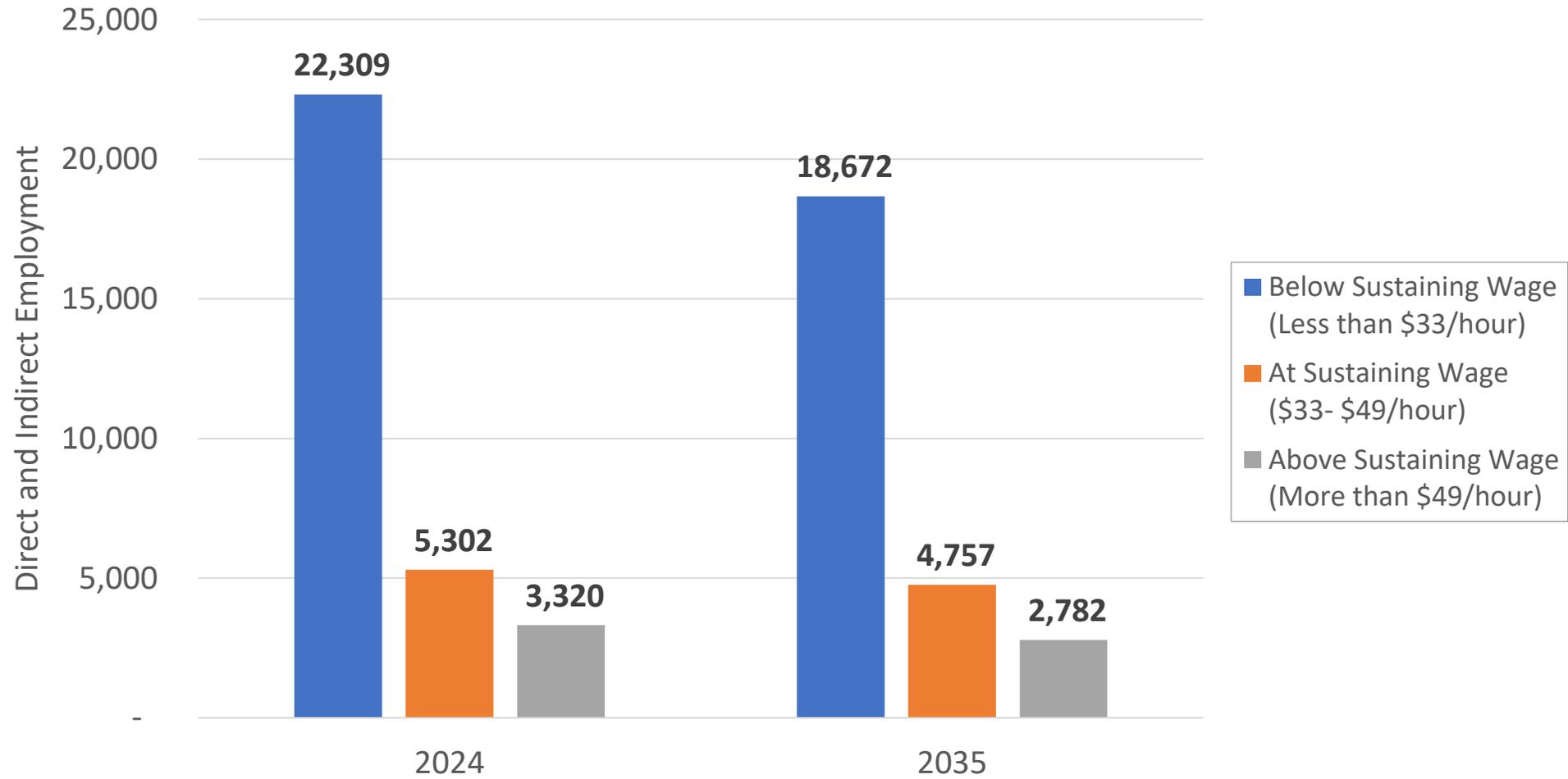


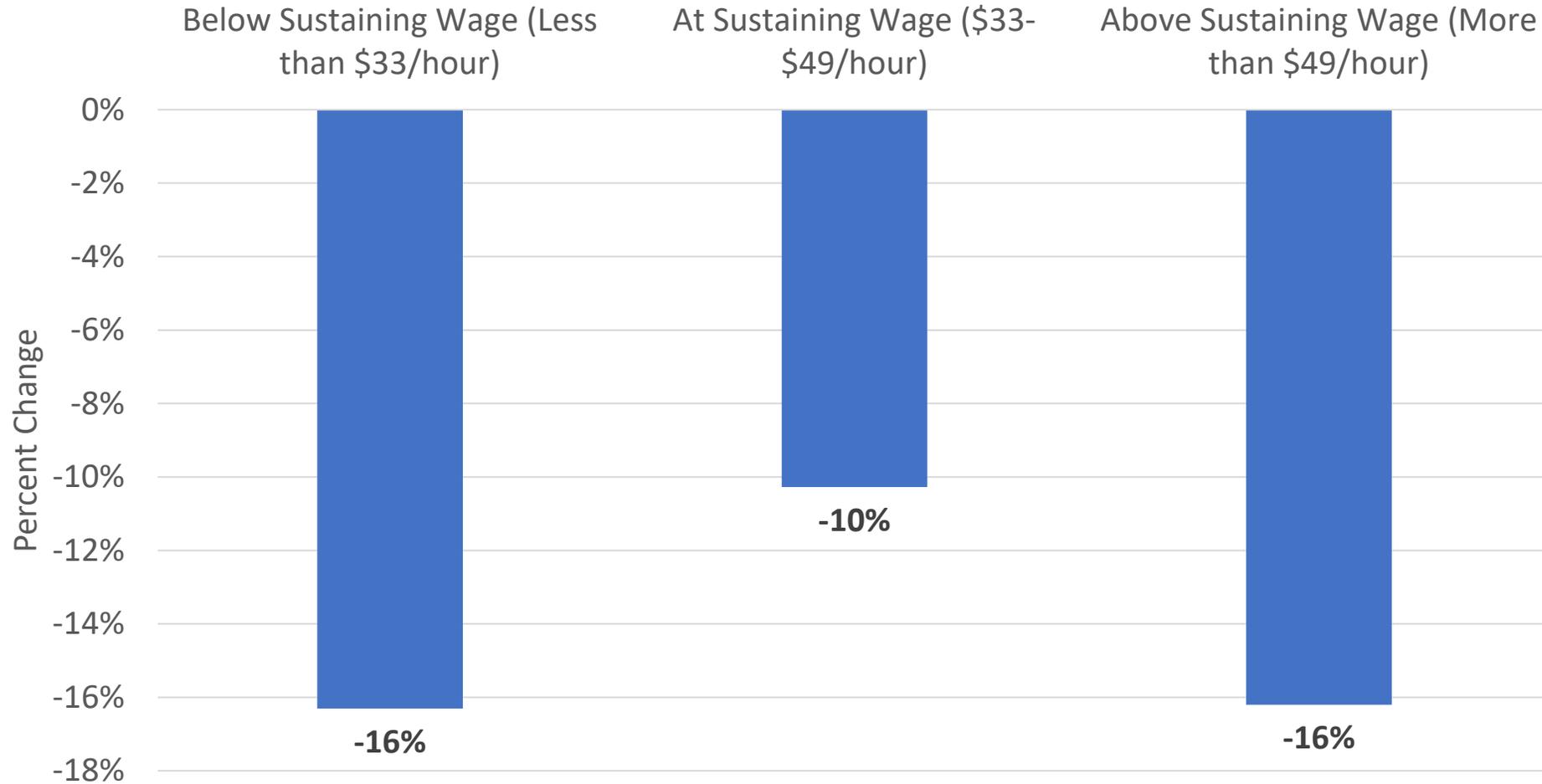
TOTAL EMPLOYMENT BY WAGE TIER – BUILDINGS, WEST OREGON



JOB QUALITY TIER CHANGE (2024-2035) – BUILDINGS, WEST OREGON

TOTAL EMPLOYMENT BY WAGE TIER – TRANSPORTATION, WEST OREGON



JOB QUALITY TIER CHANGE (2024-2035) – TRANSPORTATION, WEST OREGON



Part 4.4

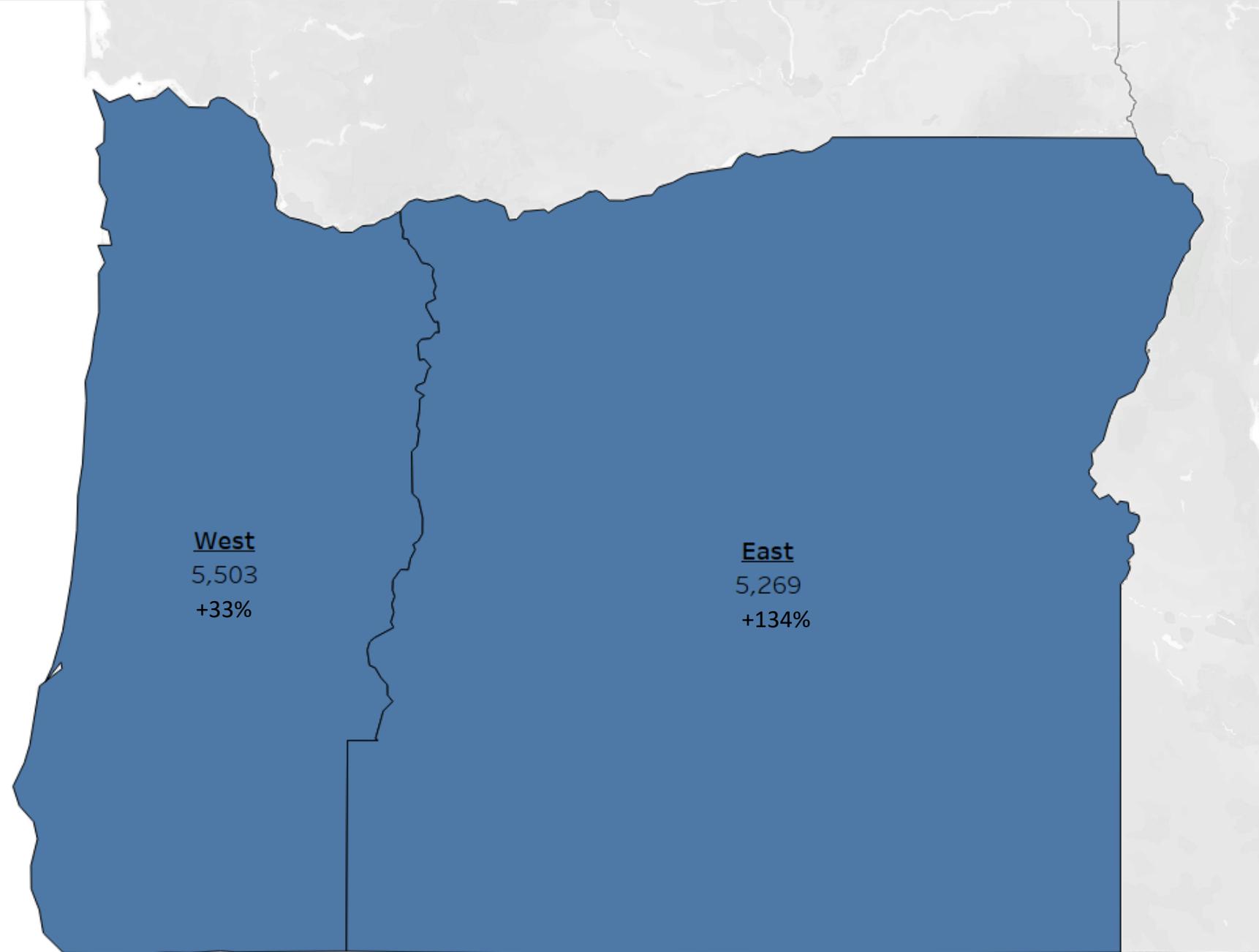
Reference Scenario Secondary Employment Outputs (SEOs) – Regional Comparisons

Oregon Energy Strategy

Part 5: Electricity Sector SEOs

Regional Comparison

Values shown are the net job changes from 2024 to 2035 for all direct and indirect employment within the Electricity sector.



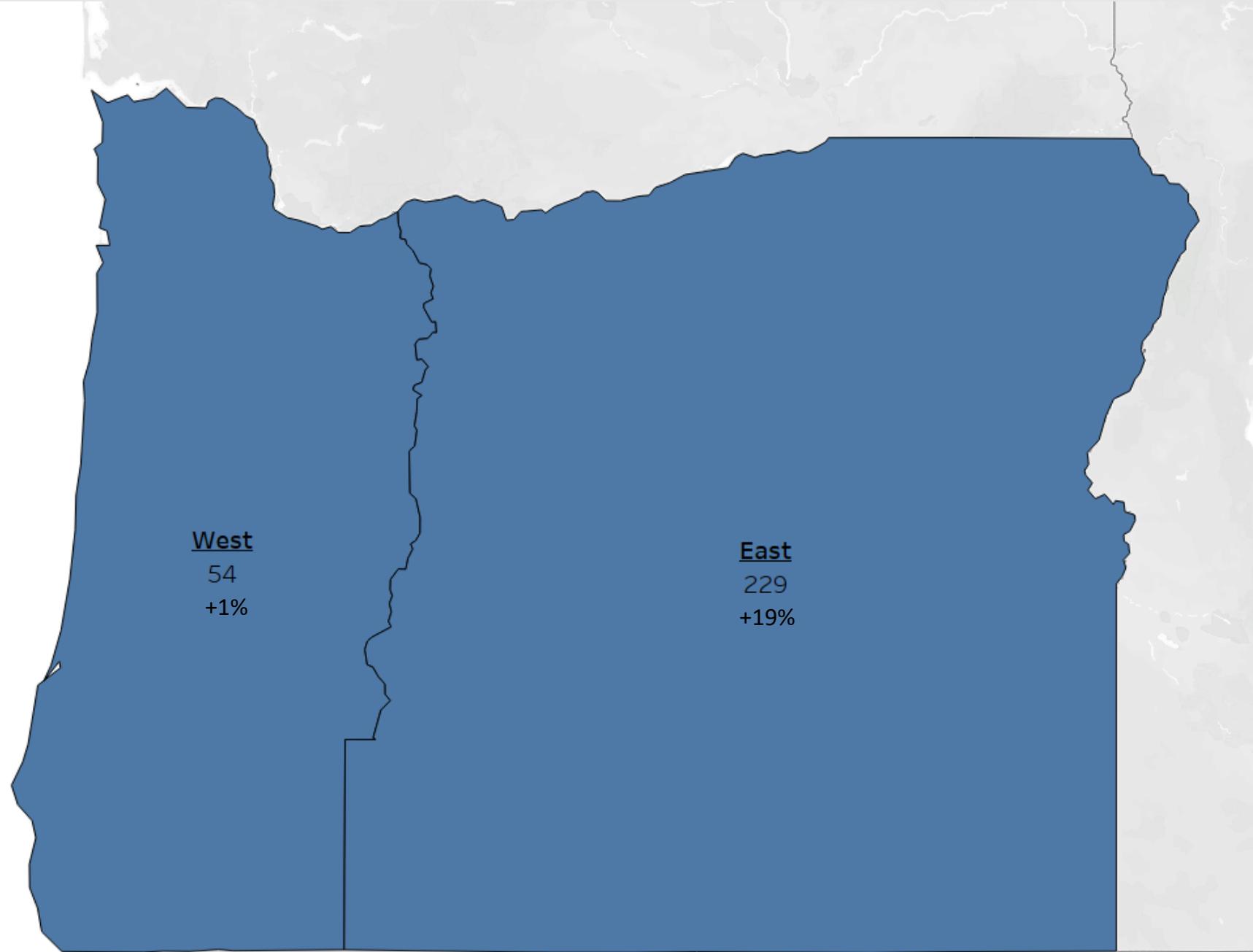
Electricity Jobs Created by 2035 (Reference)

Oregon Energy Strategy

Part 6: Fuels Sector SEOs

Regional Comparison

Values shown are the net job changes from 2024 to 2035 for all direct and indirect employment within the Fuels sector.



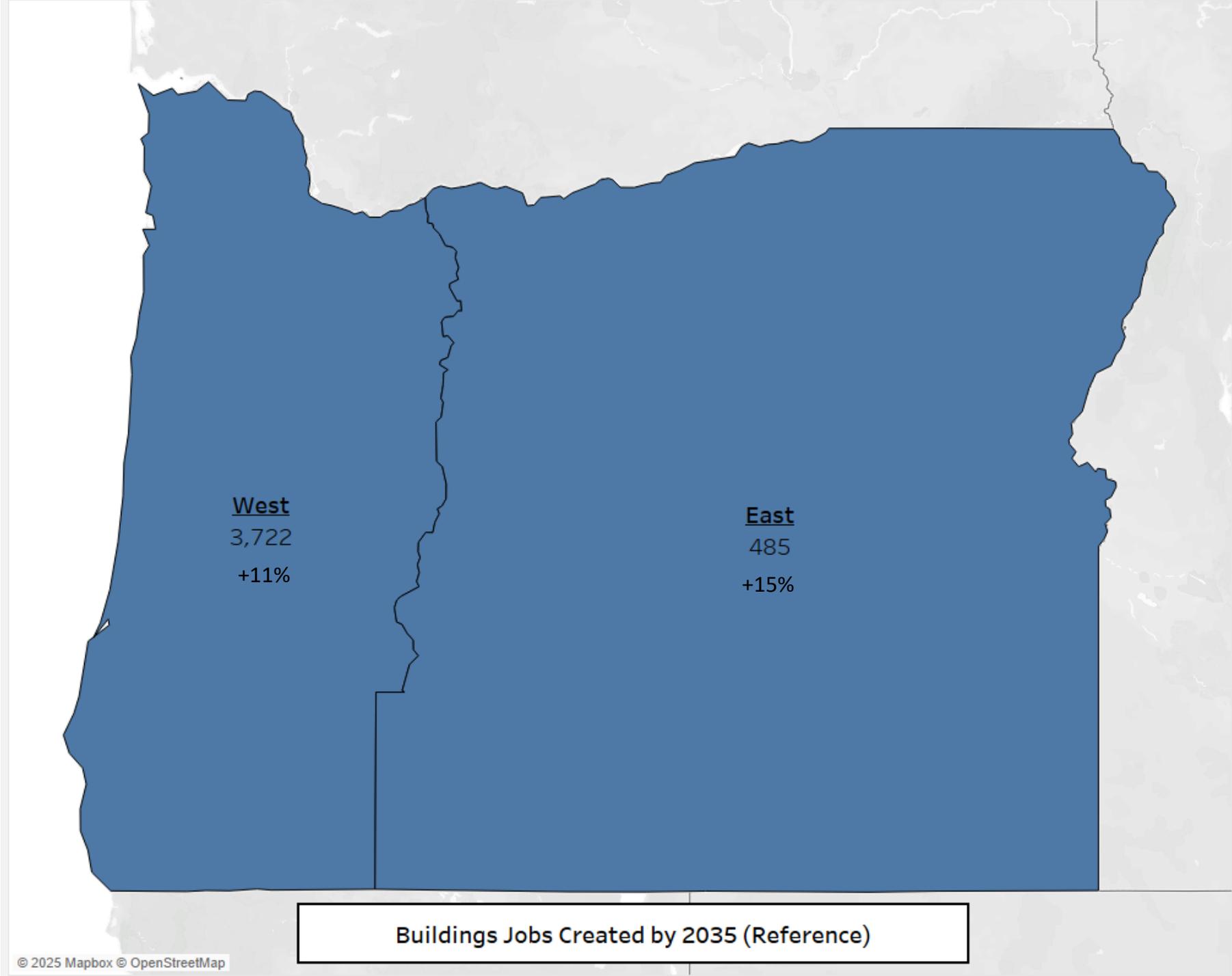
Fuel Jobs Created by 2035 (Reference)

Oregon Energy Strategy

Part 8: Buildings Sector SEOs

Regional Comparison

Values shown are the net job changes from 2024 to 2035 for all direct and indirect employment within the Buildings sector.

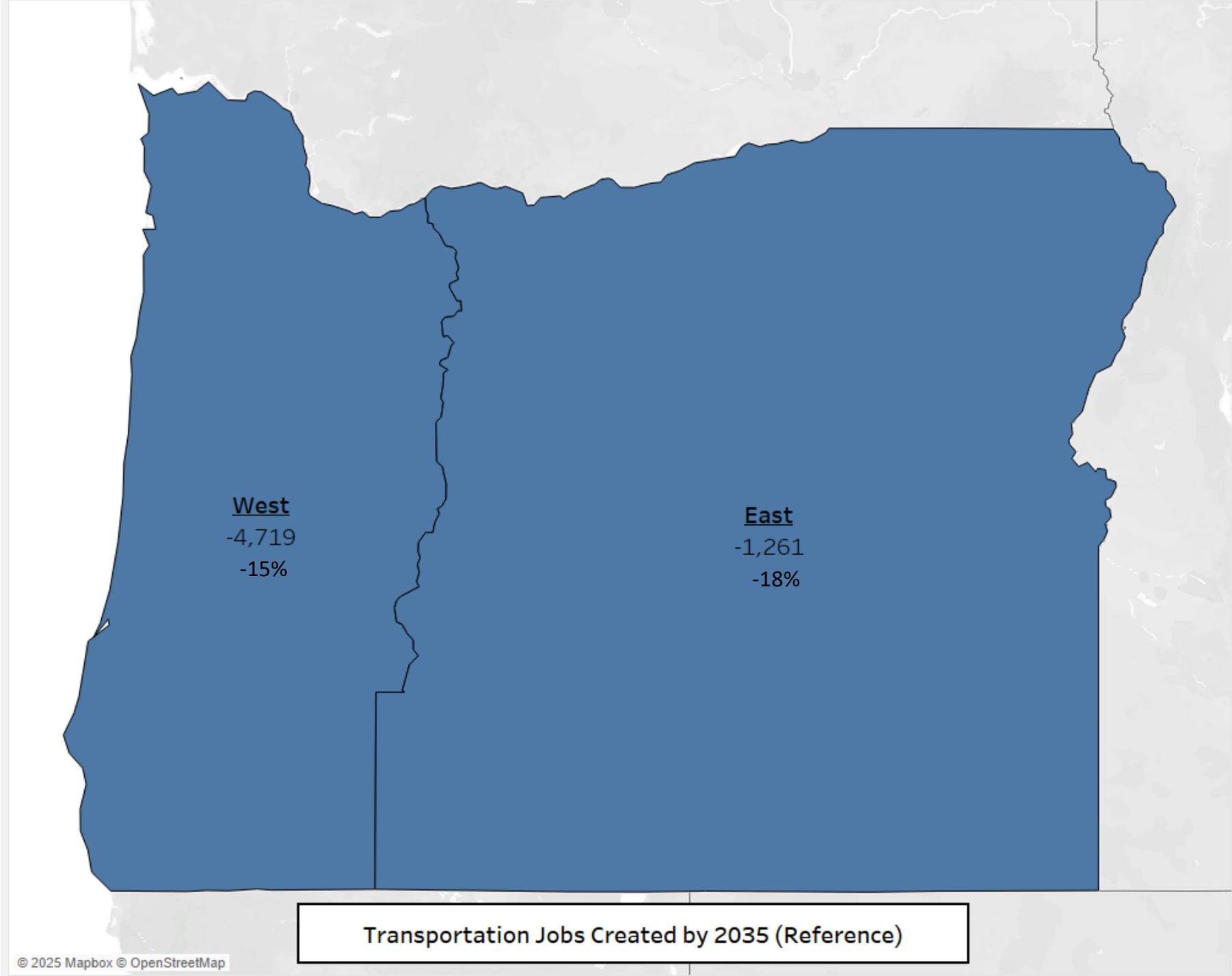


Oregon Energy Strategy

Part 7: Transportation Sector SEOs

Regional Comparison

Values shown are the net job changes from 2024 to 2035 for all direct and indirect employment within the Transportation sector.



Transportation Jobs Created by 2035 (Reference)



Part 5

Alternative Scenarios

Overall Key Findings I: Scenarios and Sensitivities Analyzed

- In addition to the Reference Scenario, the jobs study modeled six (highlighted below) of the ten alternative scenarios and *sensitivities*, selected based on which ones were likely to provide the greatest learnings about jobs implications:
 - *0a. No Change in VMT (No VMT)*
 - *0b. 50% Lower Tech Load Growth (50% Tech Load)*
 - *0c. No Advanced Clean Trucks Regulation (No ACT)*
 - **1. Delayed Energy Efficiency and Building Electrification (Delayed BE & EE)**
 - 2. Delayed Transportation Electrification (Delayed TE)
 - 3. Limited Demand Response (Ltd DR)
 - **4. Limited Utility-Scale Electricity Generation in Oregon (Ltd Gen)**
 - **5. High Distributed Energy Resources + Limited Transmission (High DER + Ltd Tx)**
 - *5a. No Change in VMT with High Distributed Energy Resources + Limited Transmission*
 - **6. Alternative Flexible Resources (Alt Flex Res)**
- For the sake of clarity, both scenarios and sensitivities will be referred to as “scenarios” in the jobs analysis.

Overall Key Findings I: Scenarios and Sensitivities Analyzed

- **50% Tech Load**
 - Assumes half of Reference Scenario electricity demand from tech loads (data centers and chip fabrication), based on forecast from NW Power and Conservation Council
 - Even with only half of the modeled tech load electricity demand, Oregon's electricity demand could still increase by over 25% by 2030 and 35% by 2035
- **No ACT**
 - Assumes no interim electrification targets for medium- and heavy-duty vehicles through 2035, whereas ACT targets are assumed through 2035 in Reference Scenario and Delayed TE scenario
 - Still reaches 100% zero emission vehicle sales by 2050
 - Slower pace of transportation electrification leads to increased economy-wide costs
- **Delayed EE & BE**
 - Electrification sales shares for space and water heating in buildings delayed 10 years from Reference Scenario
 - Industrial process efficiency assumptions and fuel switching assumptions halved
 - Delaying energy efficiency and building electrification increases economy-wide costs

Overall Key Findings I: Scenarios and Sensitivities Analyzed

- **Ltd Gen**
 - Limits grid-scale wind, solar, and geothermal generation in Oregon to half of Reference Scenario
 - Leads to increased economy-wide costs and increased imported generation relative to Reference Scenario
- **High DER & Ltd Tx**
 - Higher levels of rooftop solar, demand response (vehicle-to-grid), and behind-the-meter storage; transmission limited to reconductoring
 - Rooftop solar can displace the need for some grid-scale energy
- **Alt Flex Res**
 - Does not allow construction of any new gas or biogas electricity generators (Reference Scenario allows 100% hydrogen- or new biogas-supplied electricity plants under 25 MW)
 - Leads to significantly more renewable build-out (mostly solar and geothermal), largely to create clean hydrogen from electrolysis, which can serve a flexibility role on the system

Overall Key Findings II: **Difference from Reference by Sector**

- **Buildings:** Only the Delayed EE & BE scenario differs from Reference scenario. No change from Reference in 50% Tech Load, No ACT, Ltd Gen, High DER + Ltd Tx, and Alt Flex Res scenarios.
- **Transportation:** Only the No ACT scenario differs from the Reference scenario. No change from Reference in 50% Tech Load, Delayed EE & BE, Ltd Gen, High DER + Ltd Tx, and Alt Flex Res scenarios.
- **Fuels:** Differs from the Reference scenario in all 6 alternative scenarios.
- **Electricity:** Differs from the Reference scenario in all 6 alternative scenarios.

Overall Key Findings III: Totals

50% Tech Load Scenario:

- Consistently fewer jobs throughout the modeling period compared to the Reference (3,600–6,900 fewer jobs, 2-4% difference from Reference)
- Drop is primarily driven by reductions in Electric sector employment

No ACT and Delayed EE & BE Scenarios:

- Slightly fewer total jobs by 2035 compared to the Reference (1% difference)
- Short-term losses relative to Reference shift to job gains by 2050, resulting in more total jobs than the Reference in the long run

Overall Key Findings IV: Totals

Ltd Gen Scenario:

- Slightly fewer total jobs by 2035 compared to the Reference (1% difference from Reference), gap widens by 2050 (5% difference from Reference)
- Electric sector employment drives short and long-term negative trends relative to the Reference as less in-state generating capacity is built

Alt Flex Res and High DER + Ltd Tx Scenarios:

- Consistently higher employment compared to the Reference throughout the modeling period – 1,600-3,600 more jobs (1-2% of total Reference scenario employment)
- High DER + Ltd Tx scenario sees greater employment impacts in 2035 (3,600 jobs more than Reference) than 2050 (2,700 more jobs), while the Alt Flex Res scenario sees greater employment impacts in 2050 (3,600 more jobs than Reference) than 2035 (1,600 more jobs)
- In 2050, Electric sector employment drives higher job count (90% of total jobs difference from Reference scenario)

Overall Key Findings V: Total and Percent Difference Relative to Reference Scenario

Year	Scenario	Electricity	Buildings	Fuels	Transportation	Total
2035	50% Tech Load	-3,573 (-8%)	0	-59 (-1%)	0	-3,632 (-2%)
	No ACT	-1,175 (-3%)	0	-810 (-7%)	789 (+2%)	-1,195 (-1%)
	Delayed EE & BE	-435 (-1%)	-1,020 (-2%)	235 (+2%)	0	-1,220 (-1%)
	Ltd Gen	-1,339 (-3%)	0	-244 (-2%)	0	-1,584 (-1%)
	High DER + Ltd Tx	3,890 (+9%)	0	-267 (-2%)	0	3,623 (+2%)
	Alt Flex Res	837 (+2%)	0	783 (+7%)	0	1,620 (+1%)
2050	50% Tech Load	-6,899 (-12%)	0	-25 (-0.2%)	0	-6,925 (-4%)
	No ACT	2,572 (+4%)	0	-1,340 (-9%)	995 (+3%)	2,227 (+1%)
	Delayed EE & BE	1,603(+3%)	-432 (-1%)	-199 (-1%)	0	972 (+1%)
	Ltd Gen	-7,294 (-13%)	0	-14 (-0.1%)	0	-7,309 (-5%)
	High DER + Ltd Tx	2,801 (+5%)	0	-59 (-0.4%)	0	2,742 (+2%)
	Alt Flex Res	3,226 (+6%)	0	356 (+2%)	0	3,582 (+2%)

COMPARISONS TO REFERENCE SCENARIO, 2035

	Electricity	Buildings	Fuels	Transportation	Total
50% Tech Load	-3,573	0	-59	0	-3,632
No ACT	-1,175	0	-810	789	-1,195
Delayed EE & BE	-435	-1,020	235	0	-1,220
Ltd Gen	-1,339	0	-244	0	-1,584
High DER + Ltd Tx	3,890	0	-267	0	3,623
Alt Flex Res	837	0	783	0	1,620

COMPARISONS TO REFERENCE SCENARIO, 2050

	Electricity	Buildings	Fuels	Transportation	Total
50% Tech Load	-6,900	0	-25	0	-6,925
No ACT	2,572	0	-1,340	995	2,227
Delayed EE & BE	1,603	-432	-199	0	972
Ltd Gen	-7,294	0	-14	0	-7,309
High DER + Ltd Tx	2,801	0	-59	0	2,742
Alt Flex Res	3,226	0	356	0	3,582

Key Findings by Sector I: Buildings Sector Output Totals

- The Delayed EE and BE scenario results in fewer jobs than the Reference in both the short and long term, primarily due to reductions in Commercial and Residential HVAC activity
- Short-term impact (2035) more significant than long-term impact (2050)
 - 1,000 fewer jobs than the Reference in 2035 (2% difference) and 400 fewer jobs than the Reference in 2050 (1% difference)

Key Findings by Sector II: **Transportation Sector Output Totals**

- The No ACT scenario leads to fewer job losses than the Reference by 2035 and 2050
 - 800 more jobs than Reference in 2035 (+2%), and 1,000 more jobs in 2050 (+3%)
 - Fewer job losses in fueling stations and vehicle maintenance compared to the Reference, reflecting shifts in the vehicle technology mix

Key Findings by Sector III: Electricity Sector Output Totals

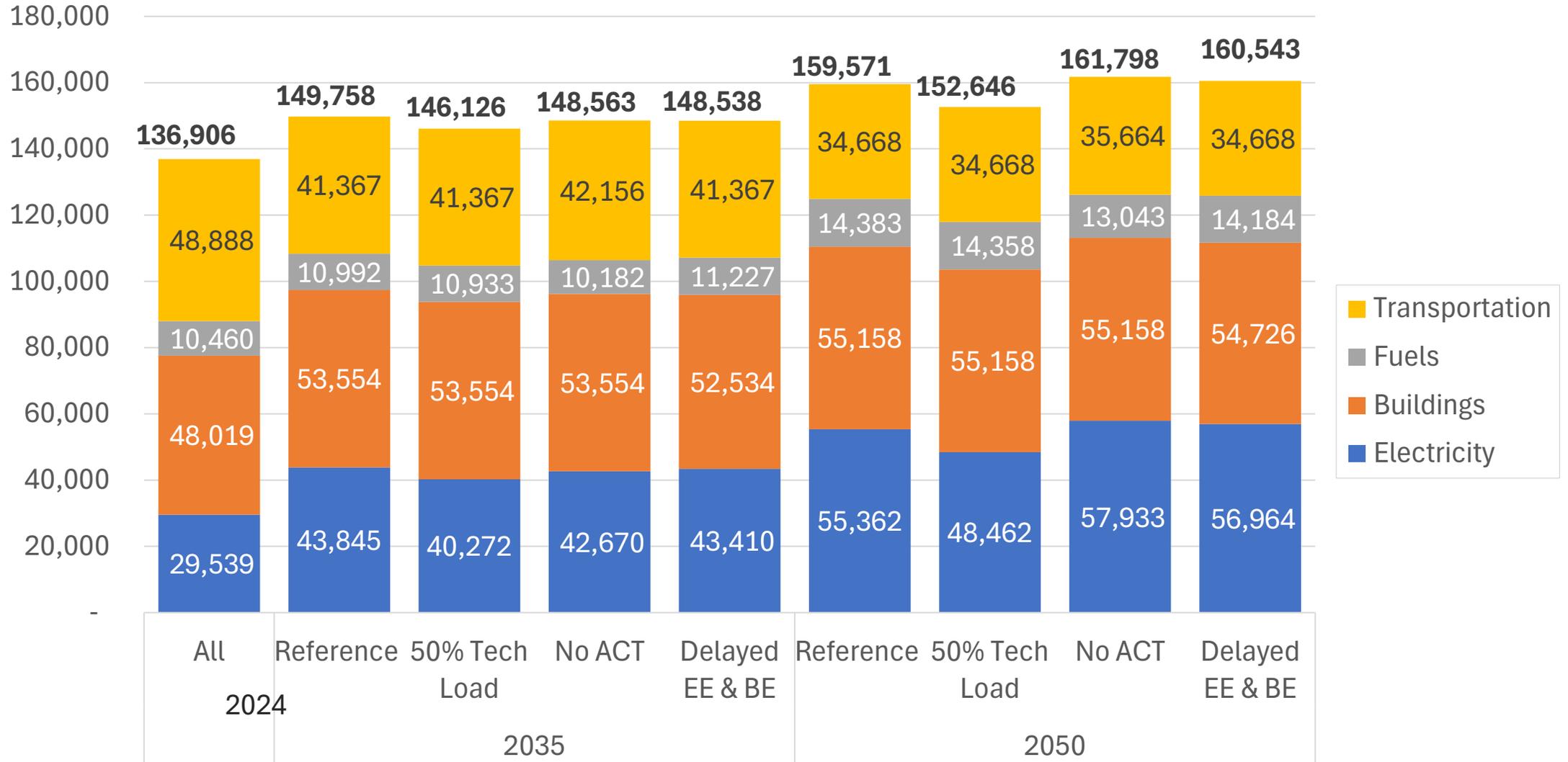
- The Alt Flex Res scenario results in increased electricity jobs relative to the Reference scenario, driven by increases in Utility solar (1,400 jobs by 2050, +28%) and Geothermal (1,400 jobs by 2050, +30%)
- The 50% Tech Load and Ltd Gen scenarios have the largest negative job impact in the Electricity sector compared to the Reference scenario driven by fewer jobs in Utility Solar (200 and 2,100 fewer jobs by 2050, -4% and -43%, respectively), Geothermal (4,200 and 2,300 fewer jobs by 2050, -86% and -48%, respectively), and Land-based wind (1,500 and 2,900 fewer jobs by 2050, -16% and -30%, respectively)
- By 2035, four of the six alternative scenarios result in fewer Electricity sector jobs than the Reference scenario. The Alt Flex Res and High DER + Ltd Tx scenarios result in more Electric sector jobs (800 and 3,900 more jobs than the Reference scenario, +2% and +7%, respectively)
- By 2050, the 50% Tech Load and Ltd Gen scenarios result in fewer Electricity sector jobs than the Reference (6,900 and 7,300 fewer jobs, -12% and -13%, respectively), while the No ACT, Delayed EE & BE, High DER + Ltd Tx, and Alt Flex Res scenarios result in more Electricity sector employment (1,600-3,200 more jobs, +3-6%)

Key Findings by Sector IV: Fuels Sector Output Totals

- Hydrogen fuels experience the largest nominal changes in job outputs across scenarios – 1,400 fewer jobs from the Reference scenario by 2050 (-26%) in the No ACT scenario and 800 more jobs than Reference by 2035 (+57%) in the Alt Flex Res scenario – while Other Fossil Fuels experience the largest percentage change from the Reference scenario, with more than double the jobs displaced by 2035 in the Ltd Gen scenario than under the Reference
- The Alt Flex Res scenario results in more jobs than the Reference scenario in both 2035 and 2050 – 800 more jobs than Reference in 2035 (+7%) and 350 more jobs in 2050 (+2%) – driven entirely by Hydrogen Fuels
- The Delayed EE & BE scenario results in more jobs than the Reference scenario in 2035, but fewer in 2050 – early offsets driven by fewer Natural Gas Distribution job losses in the Delayed EE & BE scenario than in Reference
- The 50% Tech Load, No ACT, Ltd Gen, and High DER + Ltd Tx scenarios result in fewer jobs in both 2035 and 2050 compared to the Reference

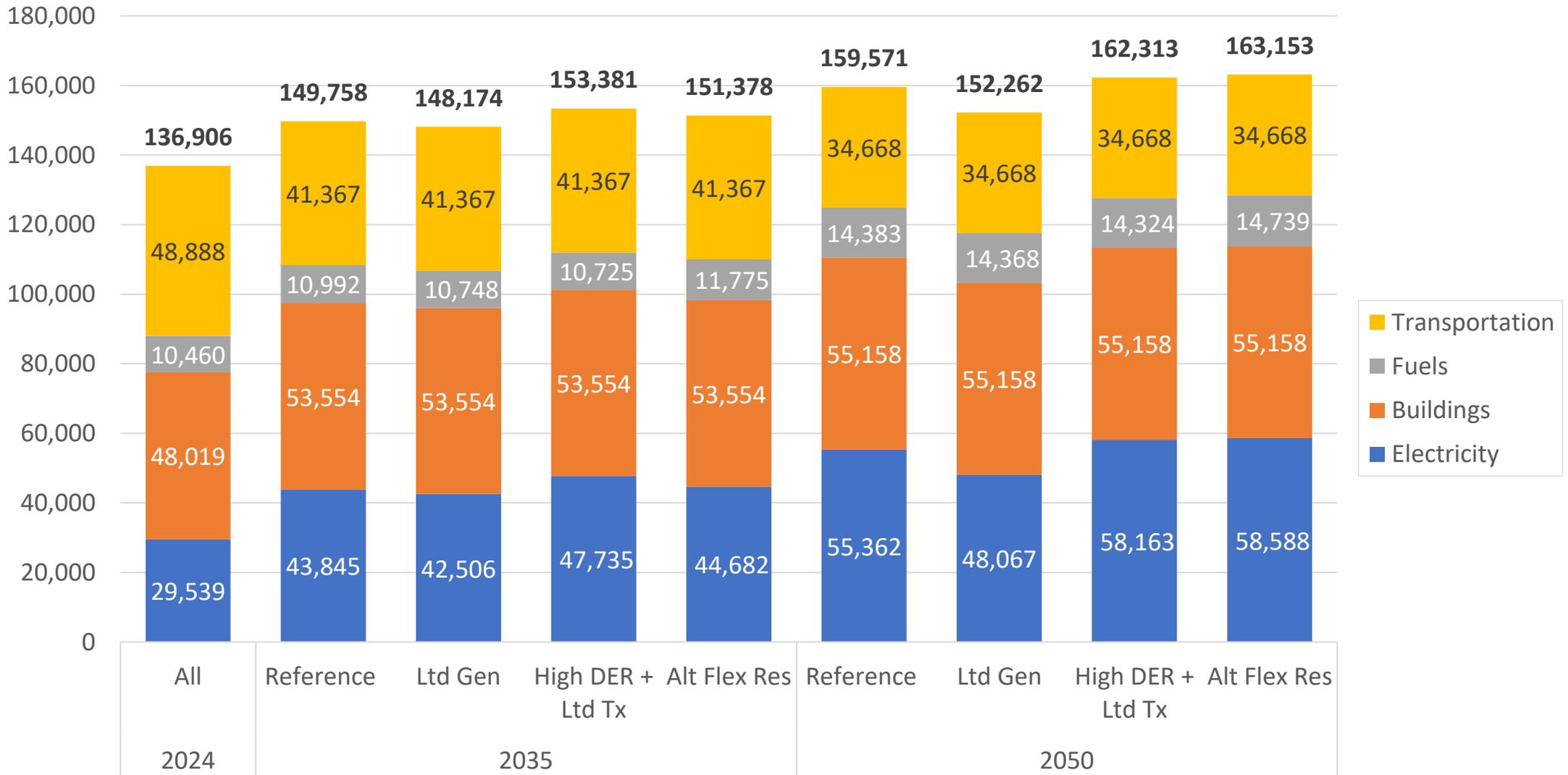
Alternative Scenario: Comparisons to Reference Scenario

EMPLOYMENT BY SECTOR – 2024, 2035, 2050



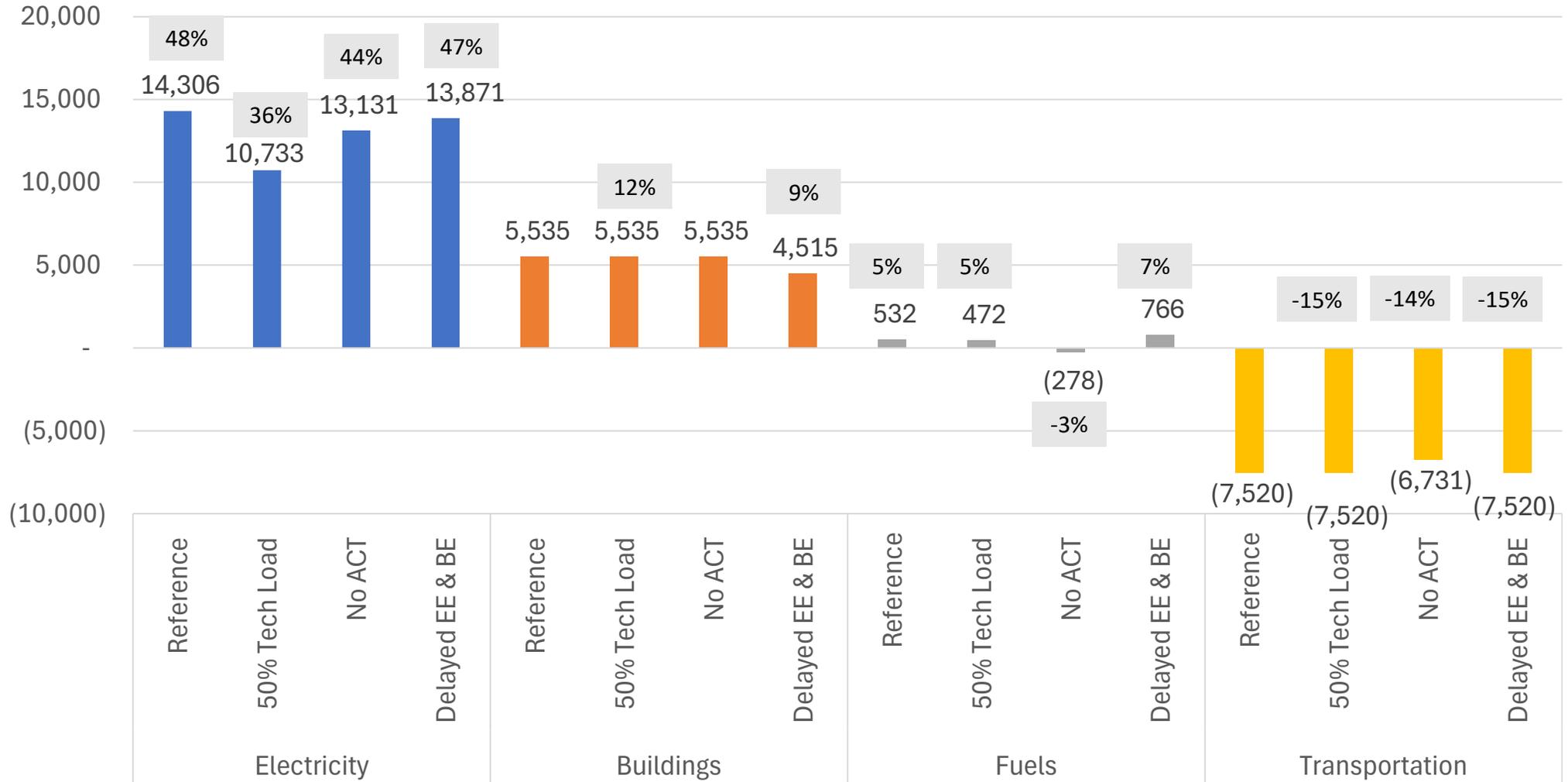
Alternative Scenario: Comparisons to Reference Scenario

EMPLOYMENT BY SECTOR – 2024, 2035, 2050



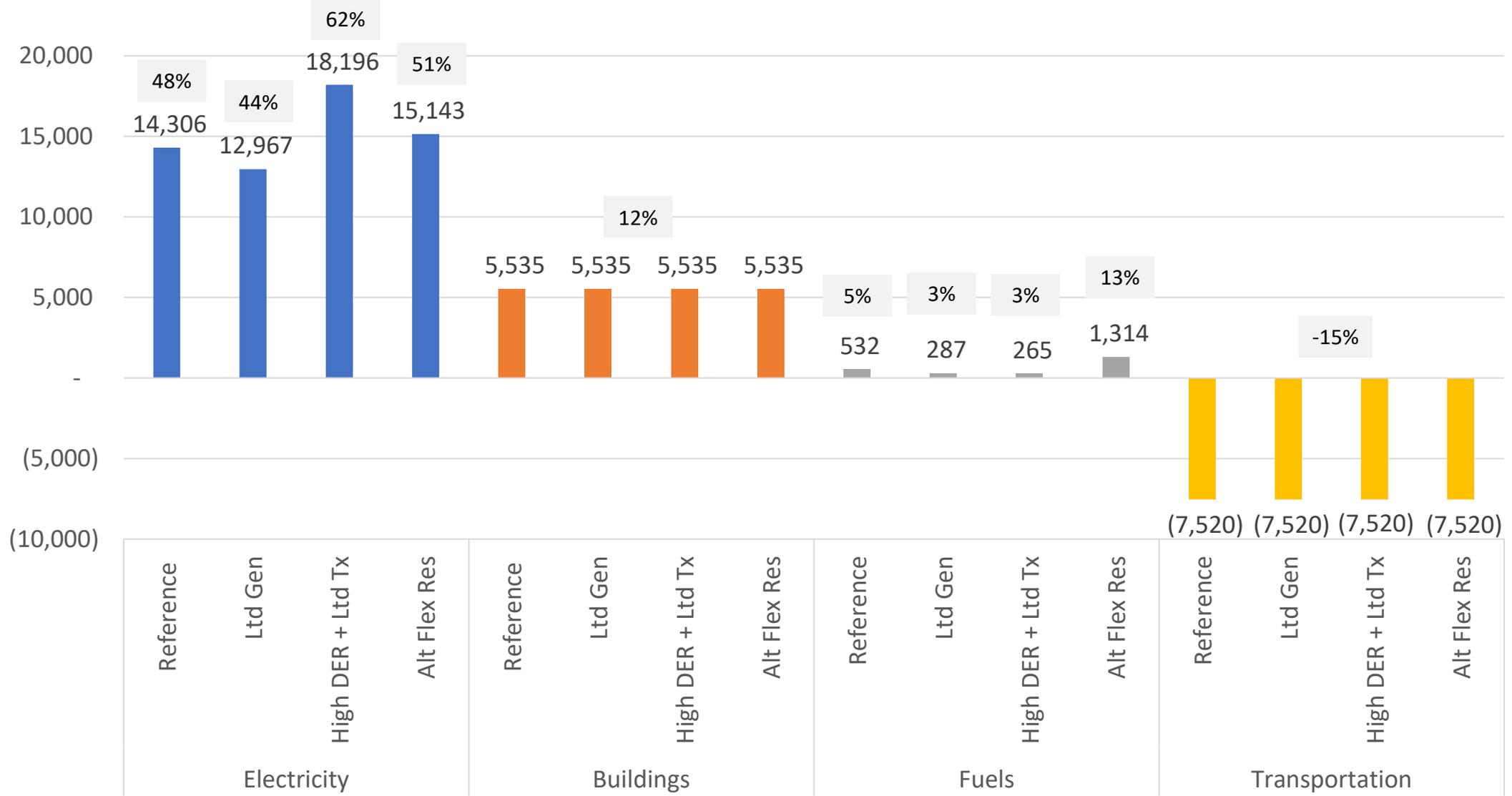
Alternative Scenario: Comparisons to Reference Scenario

NET CHANGE, 2024-2035: 50% TECH LOAD, NO ACT, DELAYED EE & BE SCENARIOS



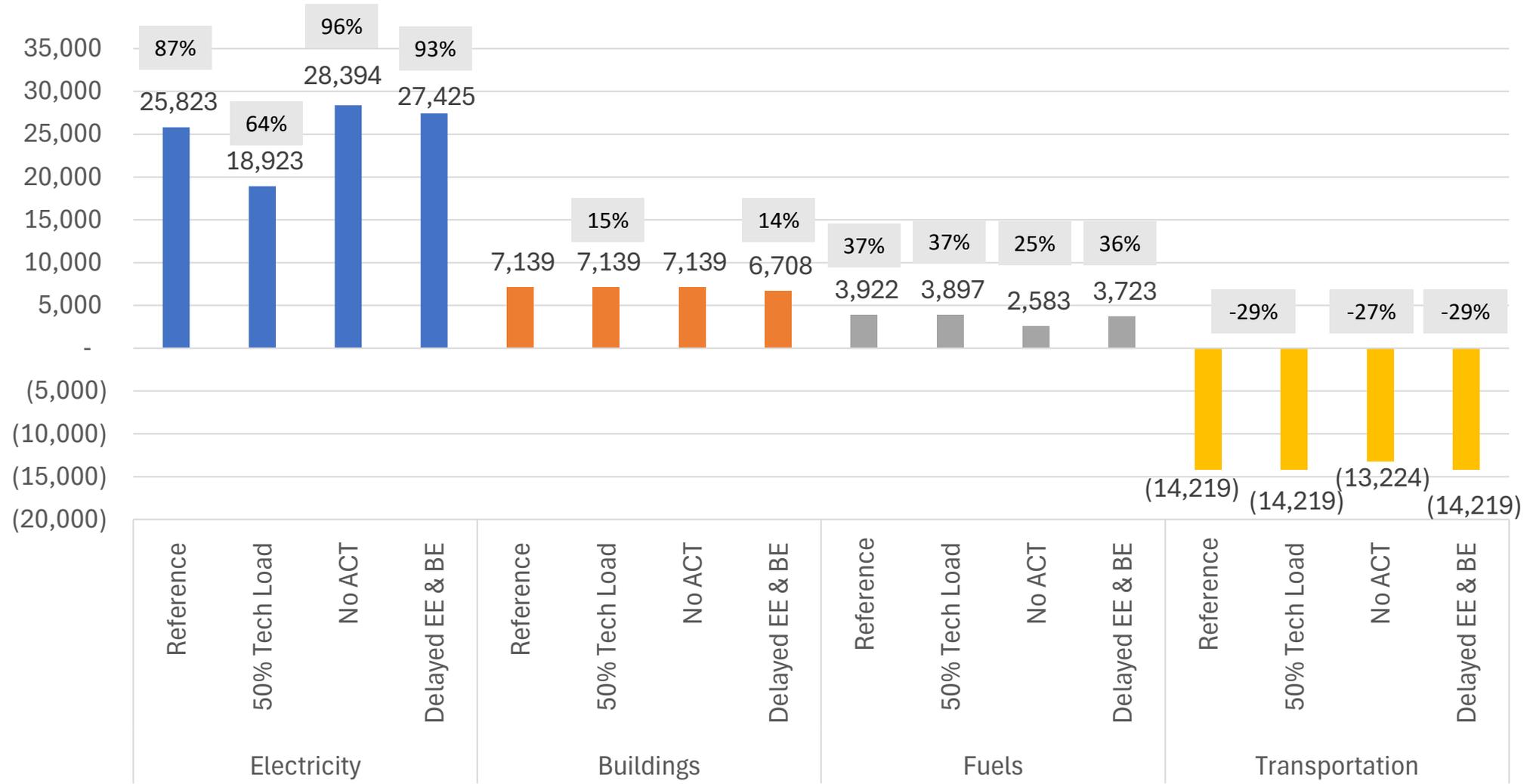
Alternative Scenario: Comparisons to Reference Scenario

NET CHANGE, 2024-2035: LTD GEN, HIGH DER + LTD TX, ALT FLEX RES SCENARIOS



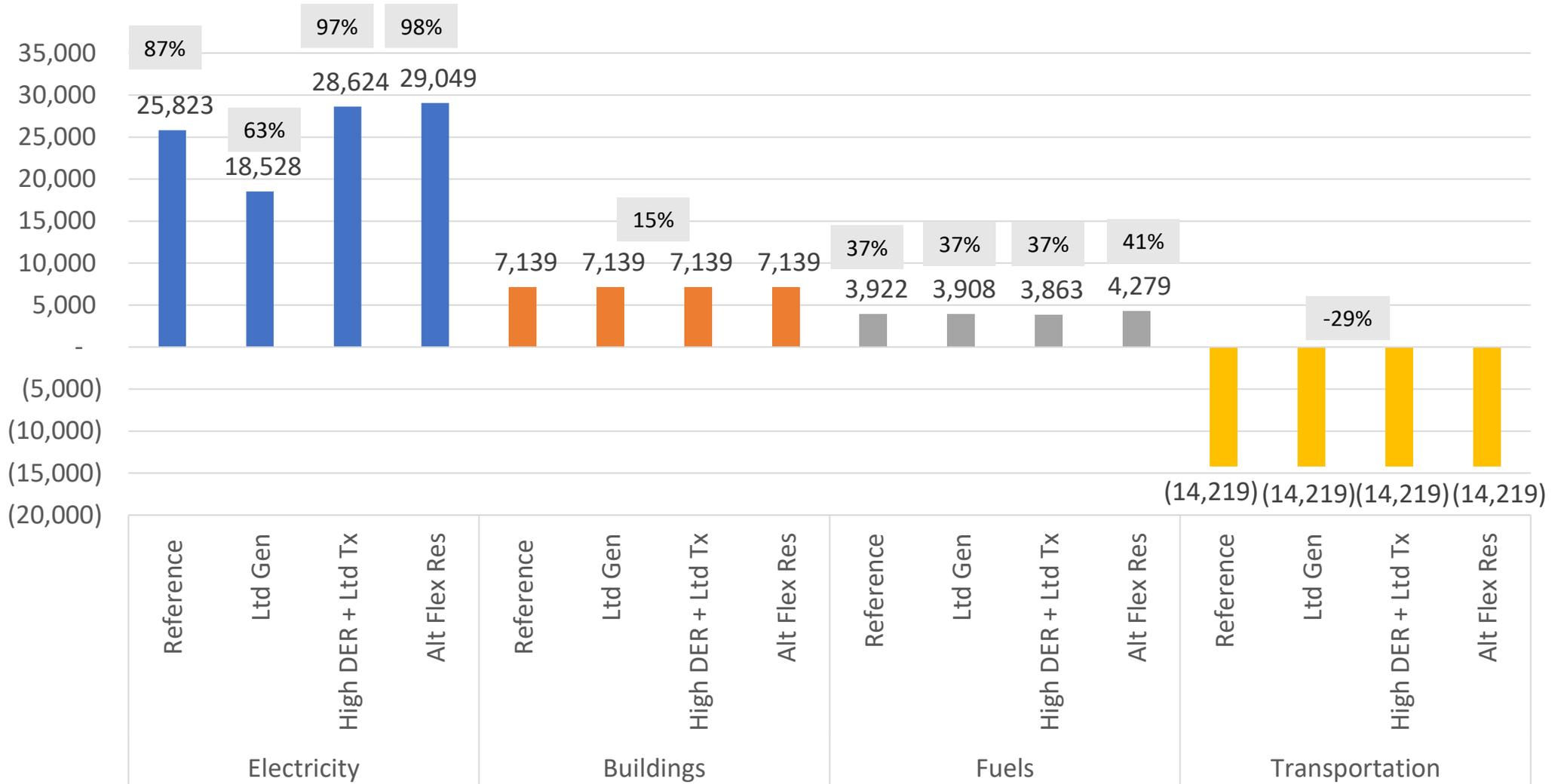
Alternative Scenario: Comparisons to Reference Scenario

NET CHANGE, 2024-2050: 50% TECH LOAD, NO ACT, DELAYED EE & BE SCENARIOS



Alternative Scenario: Comparisons to Reference Scenario

NET CHANGE, 2024-2050: LTD GEN, HIGH DER + LTD TX, ALT FLEX RES SCENARIOS





Highest Impact Sub-Sectors

Sub-sectors were selected based on the magnitude of impact in their respective sectors and are meant to be illustrative of the primary trends within each sector.

Alternative Scenario: Highest Impact Sub-Sectors

EXAMPLE TABLE: COMPARING 50% TECH LOAD, NO ACT, AND DELAYED EE & BE SCENARIO OUTPUTS

Sector	Sub-Sector	2024	2035				2050			
		All	Ref.	50% Tech Load	No ACT	Delayed EE & BE	Ref.	50% Tech Load	No ACT	Delayed EE & BE
Buildings	Commercial HVAC	11,230	13,145	13,145	13,145	12,270	13,149	13,149	13,149	13,177
Electricity	Transmission¹	2,220	5,427	4,917	5,315	5,348	7,391	6,563	7,059	7,165
Electricity	Utility Solar	1,288	2,872	1,833	2,357	2,598	4,802	4,620	5,162	4,839
Electricity	Land-based Wind	2,188	5,380	4,889	5,412	5,407	9,643	8,108	10,479	10,299
Electricity	Geothermal	160	1,814	499	1,490	1,798	4,853	668	6,761	6,075
Transportation	Fueling Stations	17,003	10,933	10,933	11,566	10,933	5,876	5,876	6,603	5,876
Fuels	Hydrogen Fuels	-	1,375	1,367	504	1,357	5,419	5,417	4,032	4,920

¹Though not reported here, Electric Distribution follows similar trends to the Electric Transmission figures detailed here.

Alternative Scenario: Highest Impact Sub-Sectors

EXAMPLE TABLE: COMPARING LTD GEN, HIGH DER + LTD TX, AND ALT FLEX RES SCENARIO OUTPUTS

Sector	Sub-Sector	2024	2035				2050			
		All	Ref.	Ltd Gen	High DER + Ltd Tx	Alt Flex Res	Ref.	Ltd Gen	High DER + Ltd Tx	Alt Flex Res
Buildings	Commercial HVAC	11,230	13,145	13,145	13,145	13,145	13,149	13,149	13,149	13,149
Electricity	Transmission¹	2,220	5,427	5,411	5,358	5,709	7,391	7,415	7,314	7,551
Electricity	Utility Solar	1,288	2,872	3,128	2,188	4,939	4,802	2,739	3,946	6,154
Electricity	Land-based Wind	2,188	5,380	4,577	5,294	5,233	9,643	6,773	9,487	10,416
Electricity	Geothermal	160	1,814	1,069	1,770	1,977	4,853	2,535	5,295	6,297
Transportation	Fueling Stations	17,003	10,933	10,933	10,933	10,933	5,876	5,876	5,876	5,876
Fuels	Hydrogen Fuels	-	1,375	1,413	1,401	2,157	5,419	5,468	5,429	5,742

¹Though not reported here, Electric Distribution follows similar trends to the Electric Transmission figures detailed here.

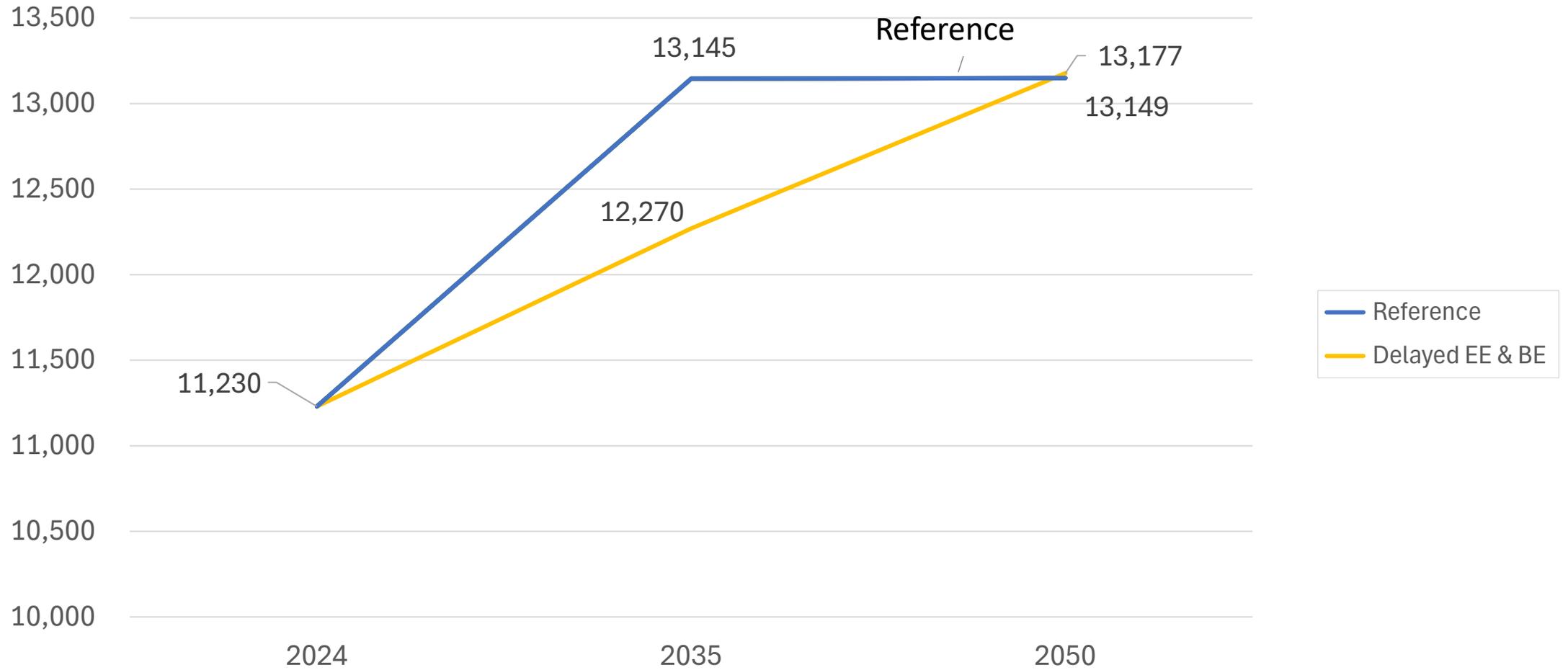
COMPARISONS TO REFERENCE SCENARIO BY SUBSECTOR, 2035

	Commercial HVAC	Transmission	Utility Solar	Land-based Wind	Geothermal	Fueling Stations	Hydrogen Fuels
50% Tech Load	0	-510	-1,039	-491	-1,315	0	-8
No ACT	0	-112	-515	32	-324	633	-871
Delayed EE & BE	-875	-79	-274	27	-16	0	-18
Ltd Gen	0	-16	256	-803	-745	0	38
High DER + Ltd Tx	0	-69	-684	-86	-44	0	26
Alt Flex Res	0	282	2,067	-147	163	0	782

COMPARISONS TO REFERENCE SCENARIO BY SUBSECTOR, 2050

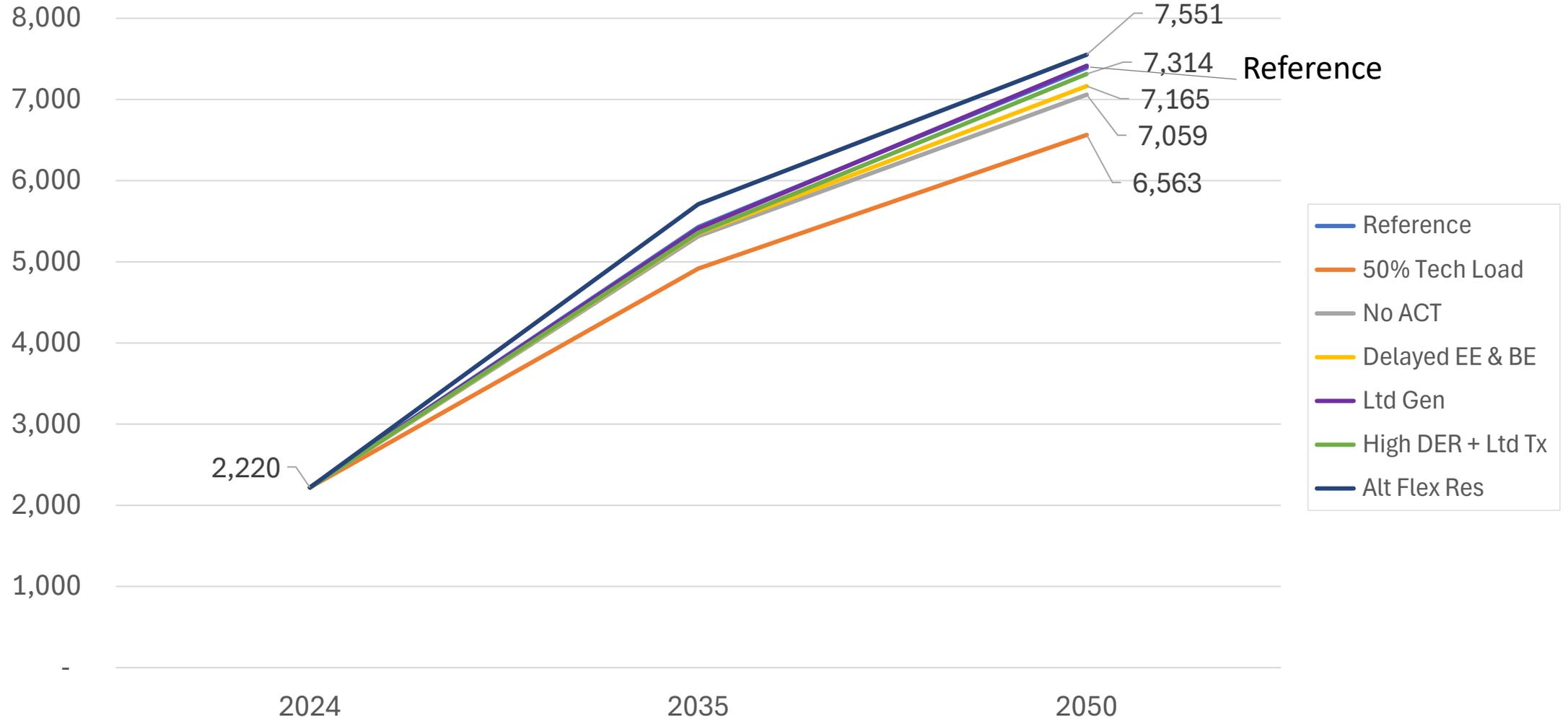
	Commercial HVAC	Transmission	Utility Solar	Land-based Wind	Geothermal	Fueling Stations	Hydrogen Fuels
50% Tech Load	0	-828	-182	-1,535	-4,185	0	-2
No ACT	0	-332	360	836	1,908	727	-1,387
Delayed EE & BE	28	-226	37	656	1,222	0	-499
Ltd Gen	0	24	-2,063	-2,870	-2,318	0	49
High DER + Ltd Tx	0	-77	-856	-156	442	0	10
Alt Flex Res	0	160	1,352	773	1,444	0	323

TOTAL OUTPUTS: COMMERCIAL HVAC SUB-SECTOR

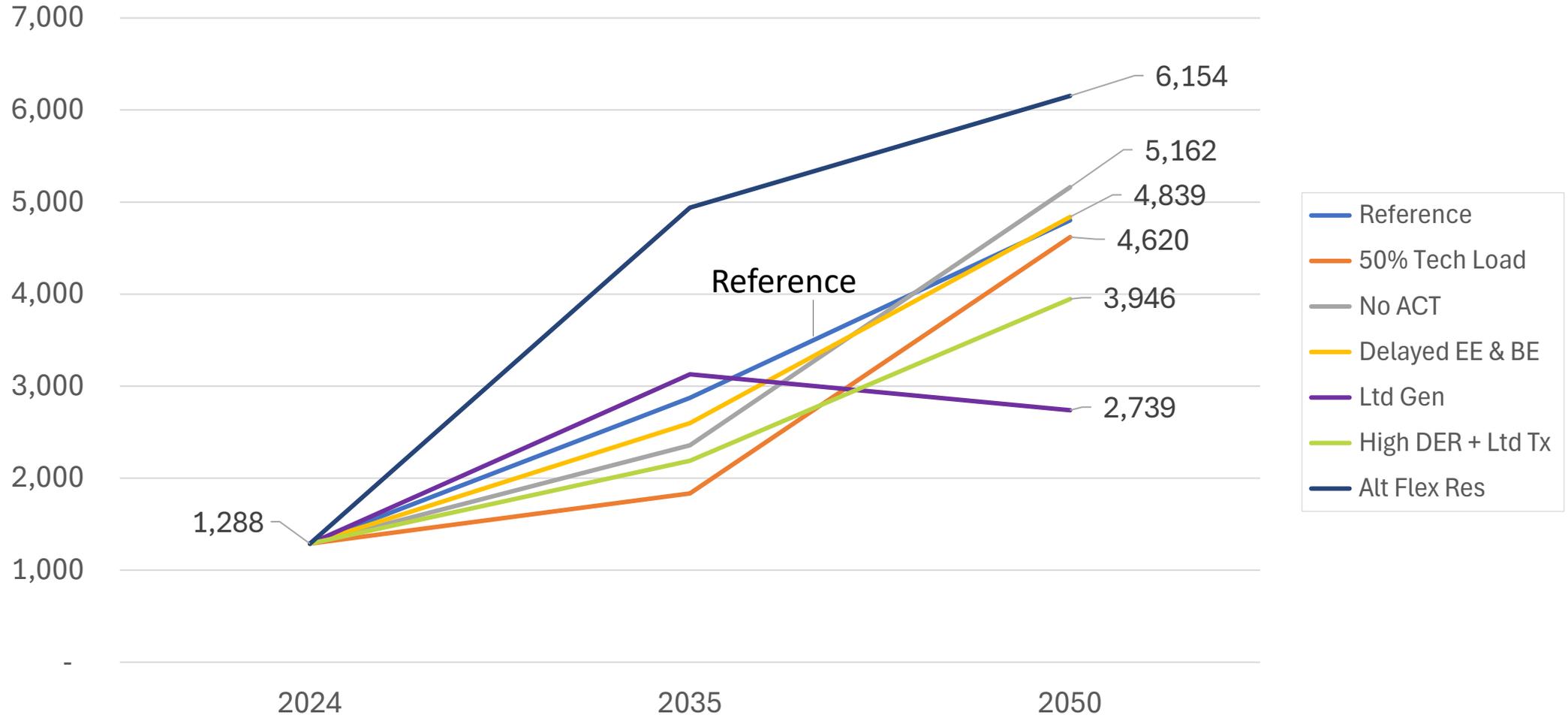


Alternative Scenario: Highest Impact Sub-Sectors

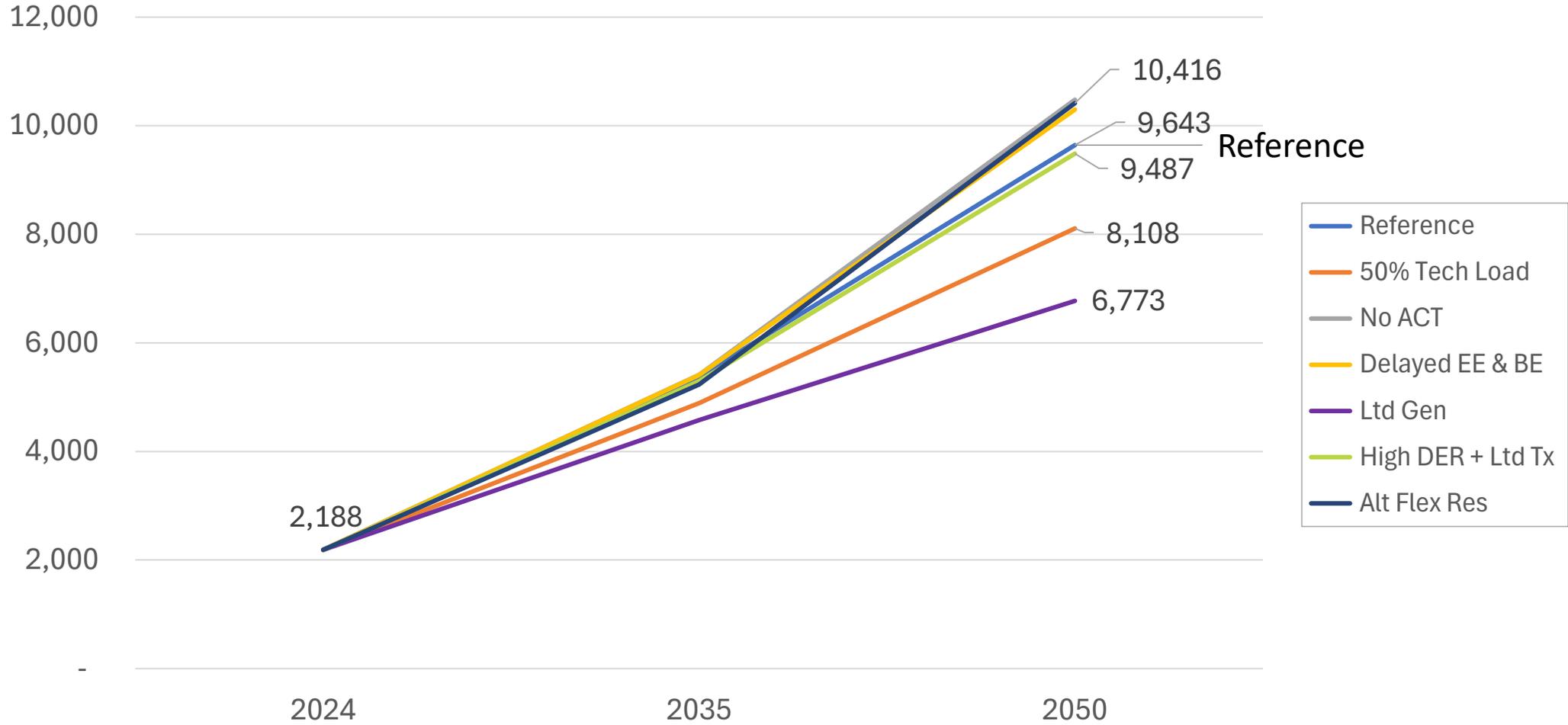
TOTAL OUTPUTS: TRANSMISSION SUB-SECTOR



TOTAL OUTPUTS: UTILITY SOLAR SUB-SECTOR

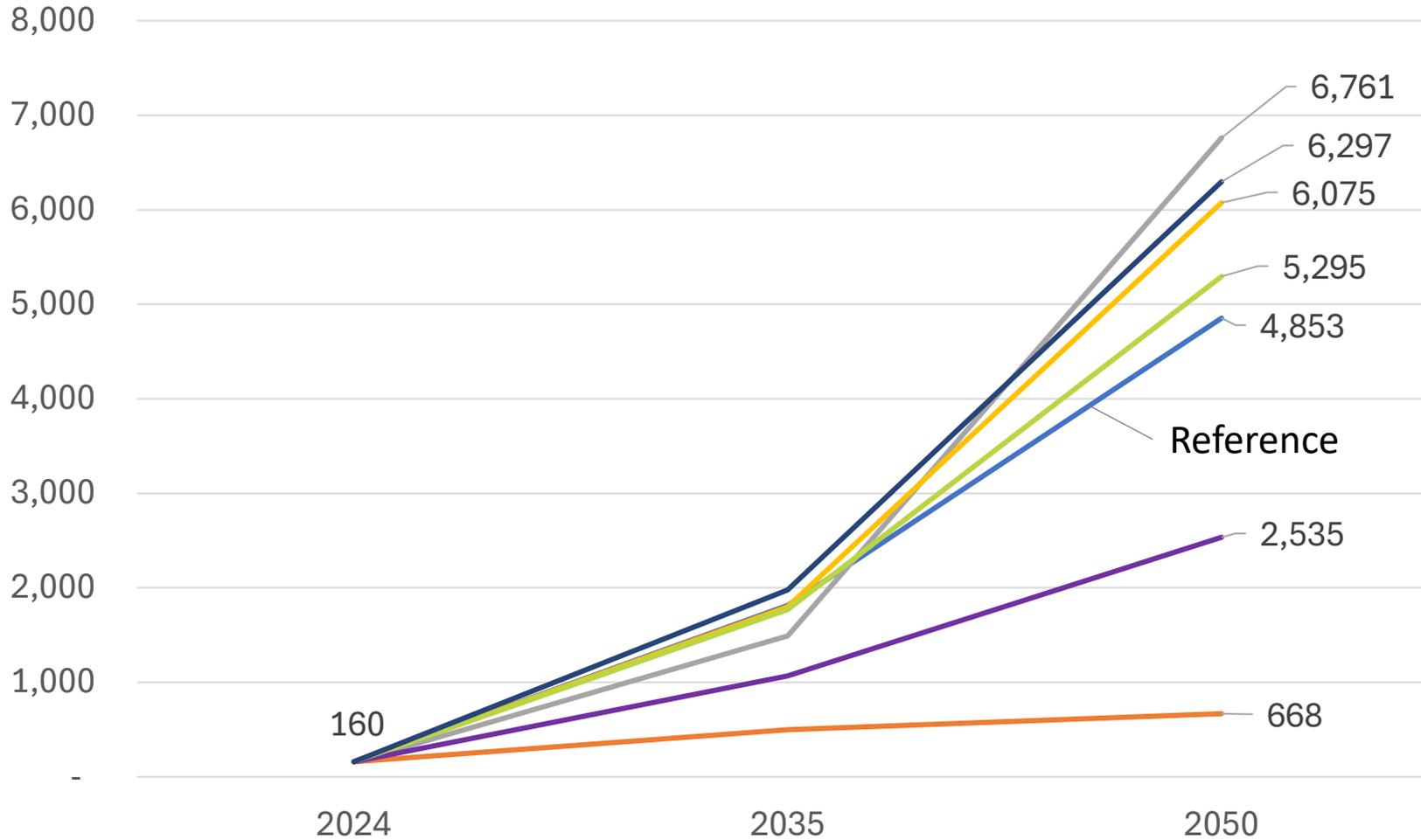


TOTAL OUTPUTS: LAND-BASED WIND SUB-SECTOR

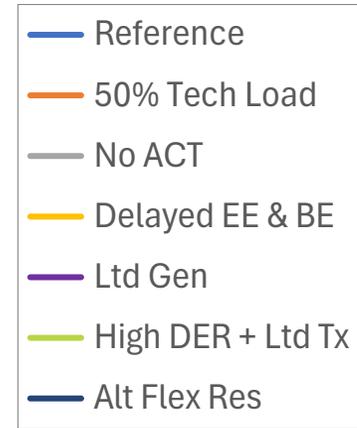


Alternative Scenario: Highest Impact Sub-Sectors

TOTAL OUTPUTS: GEOTHERMAL SUB-SECTOR

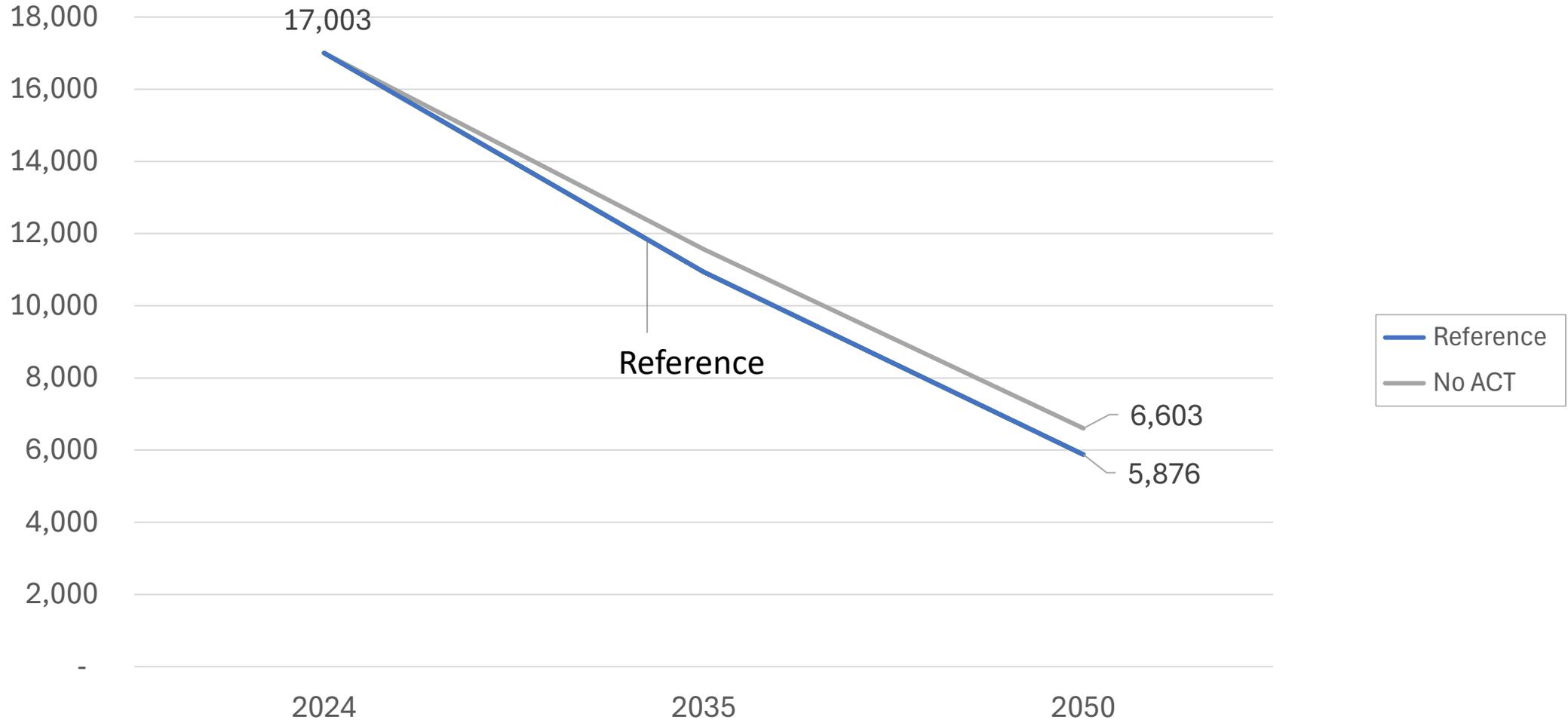


In 50% Tech-Load scenario, Oregon electric load is 12% lower by 2035 and 14% lower by 2050 compared to the Reference scenario. This reduced load led to reduced geothermal capacity in the model.

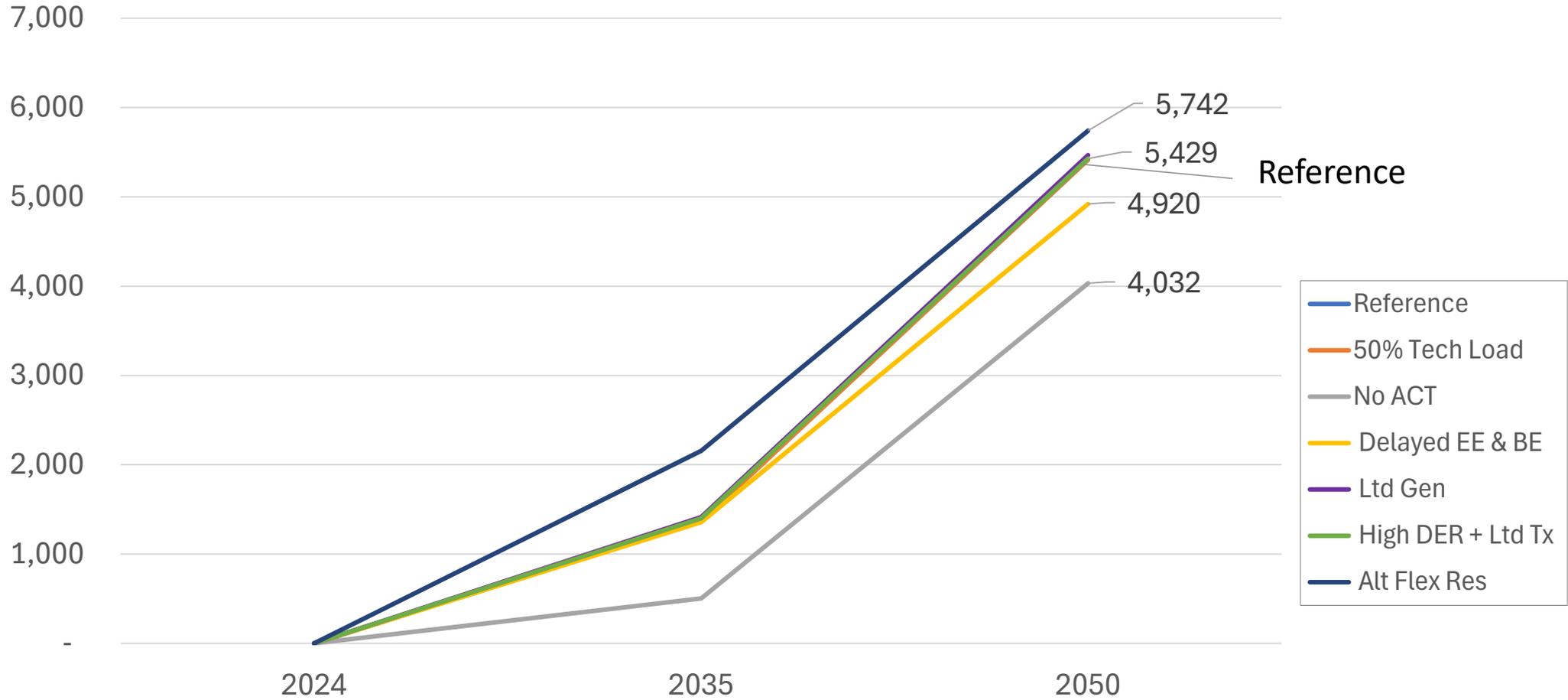


Geothermal jobs in 2035 are in advance of 2040 online date.

TOTAL OUTPUTS: FUELING STATIONS SUB-SECTOR



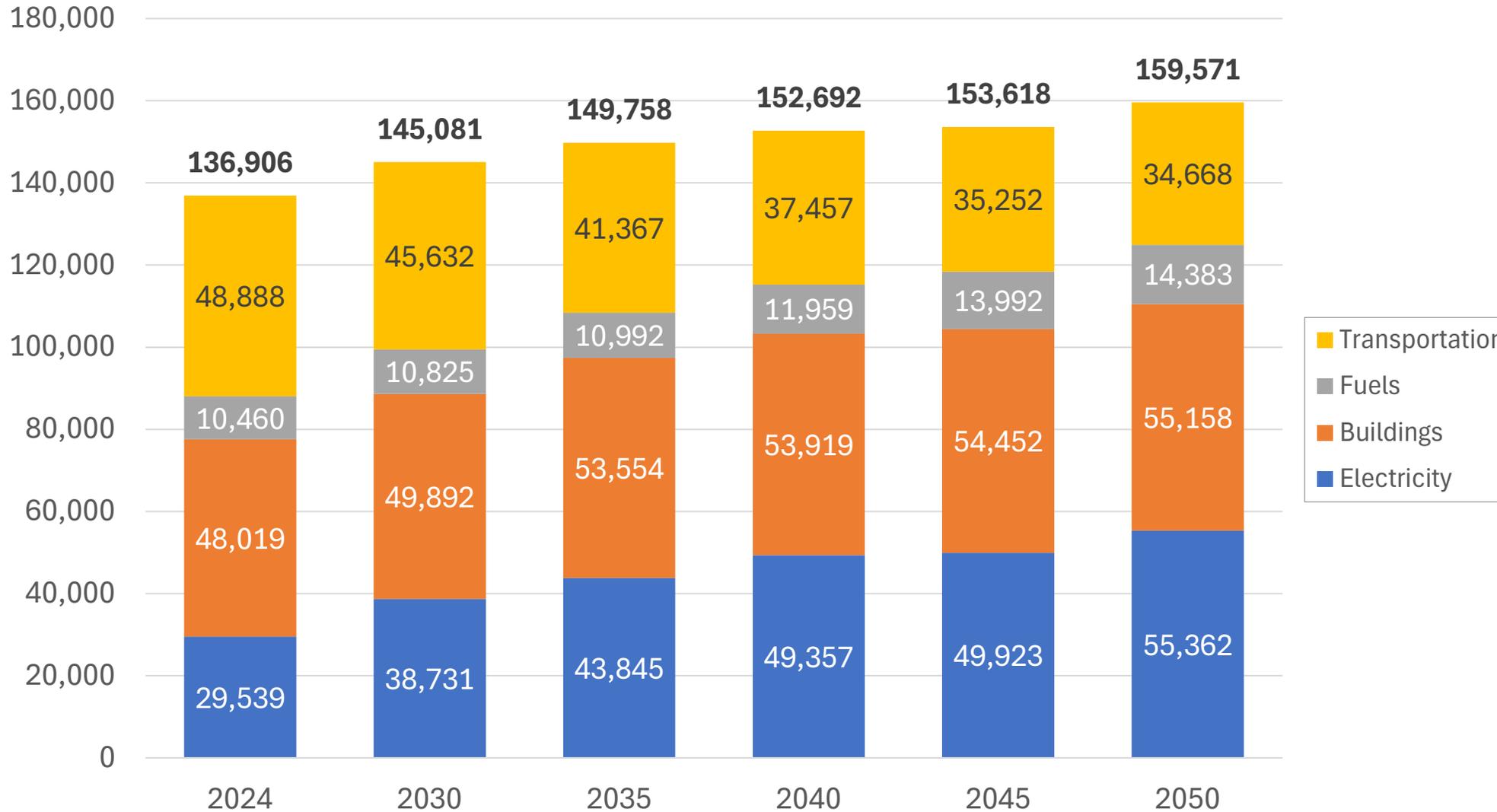
TOTAL OUTPUTS: HYDROGEN FUELS SUB-SECTOR



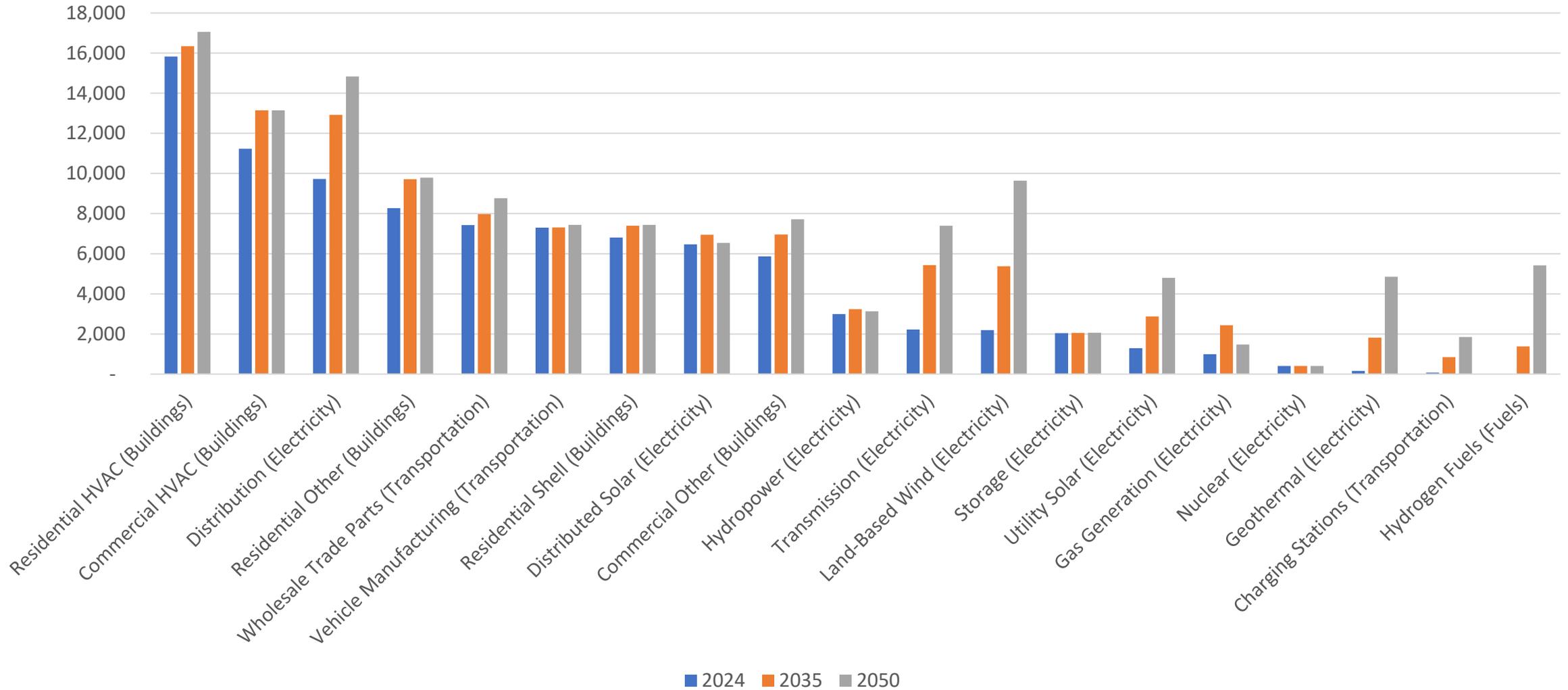


Appendix
Key Findings Across Scenarios -
Oregon

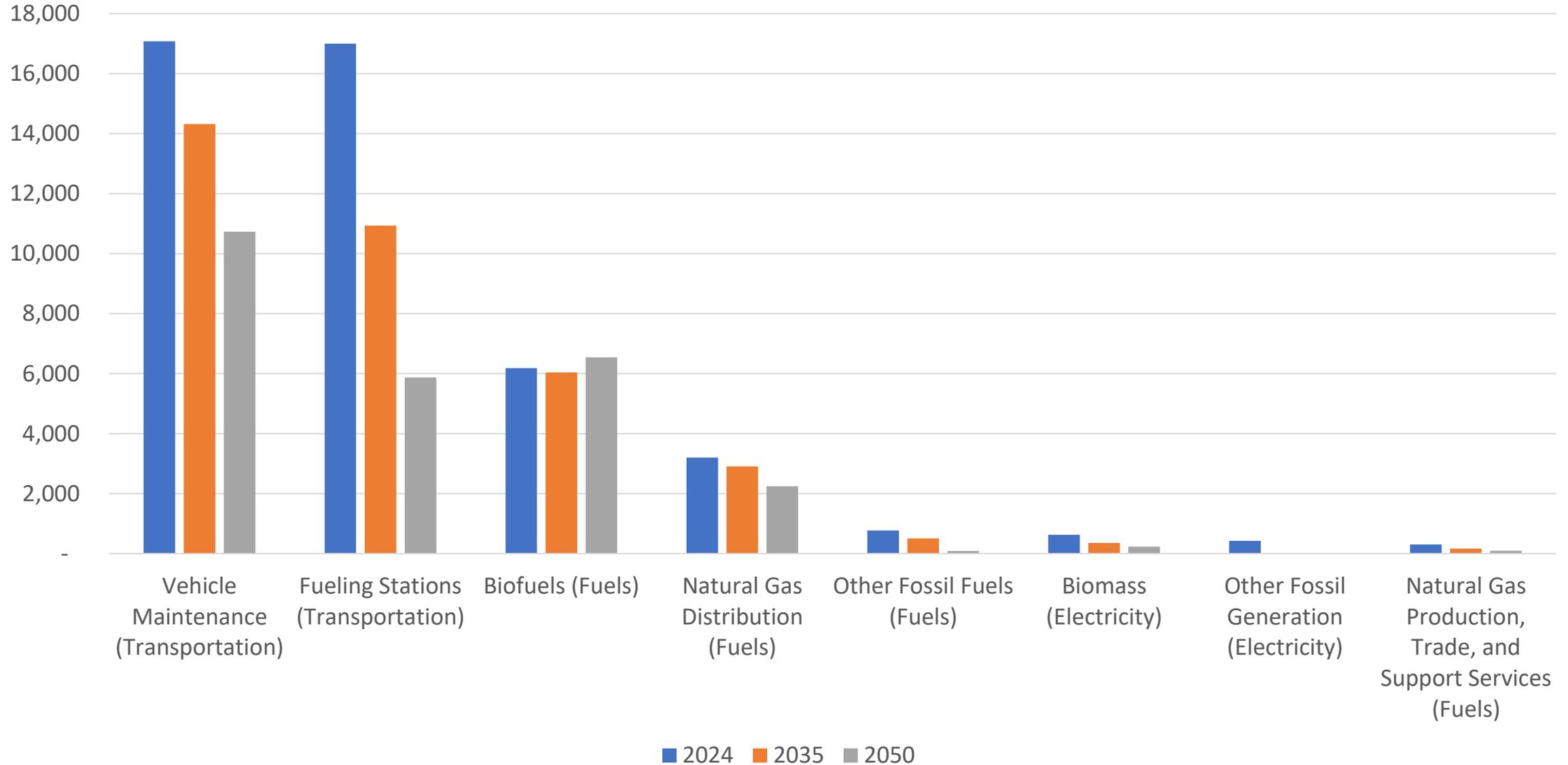
TOTAL EMPLOYMENT: REFERENCE SCENARIO, OREGON



GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, REFERENCE SCENARIO, OREGON

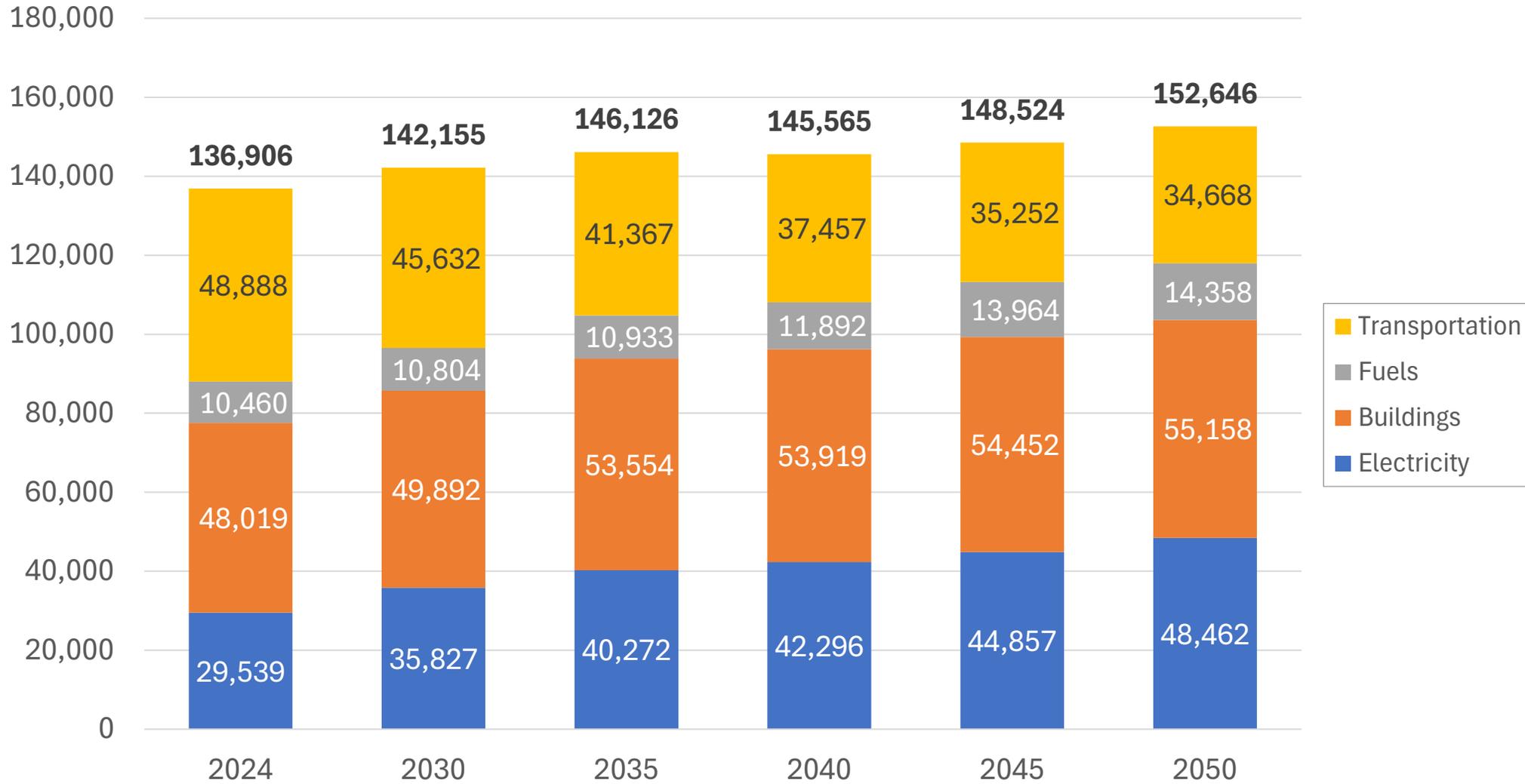


DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, REFERENCE SCENARIO, OREGON

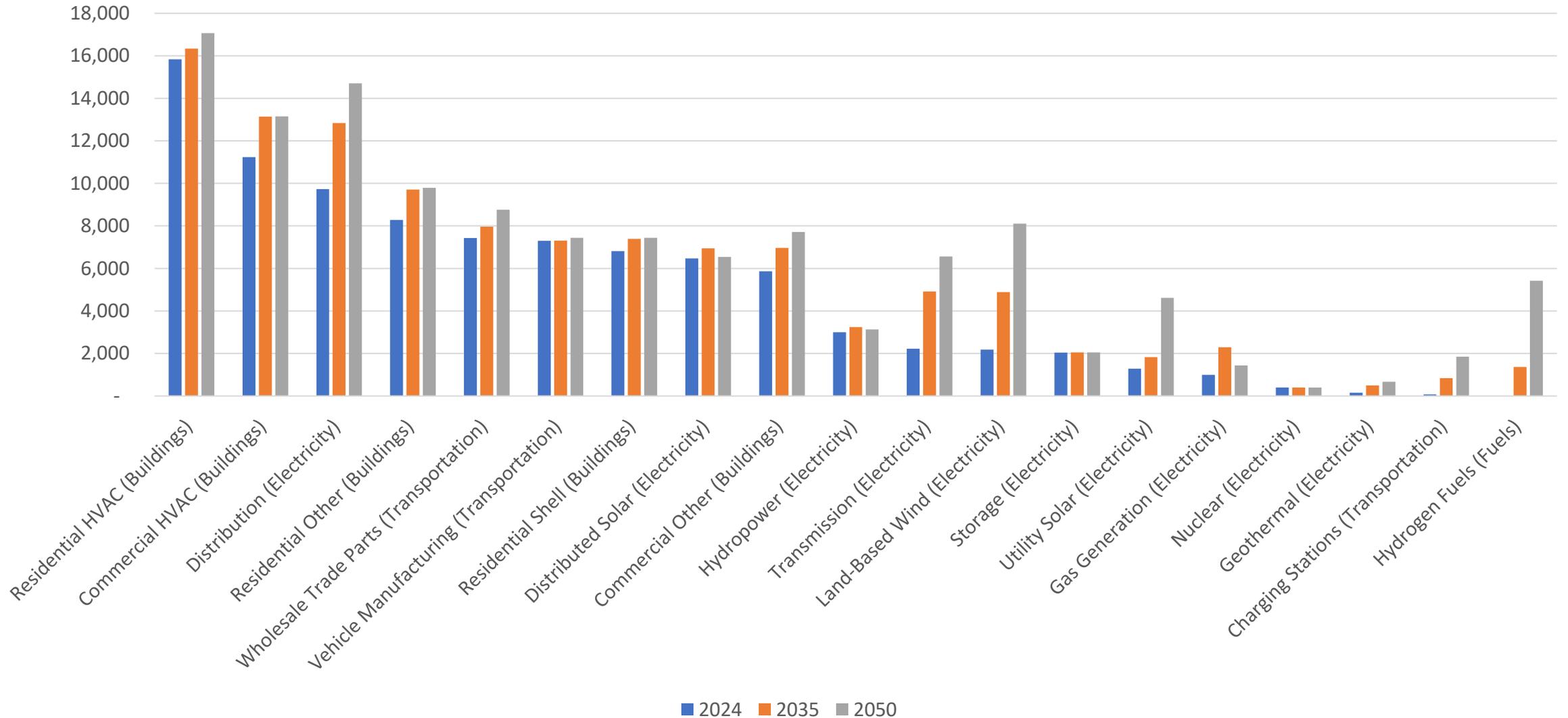


APPENDIX: Scenario Key Findings: Oregon

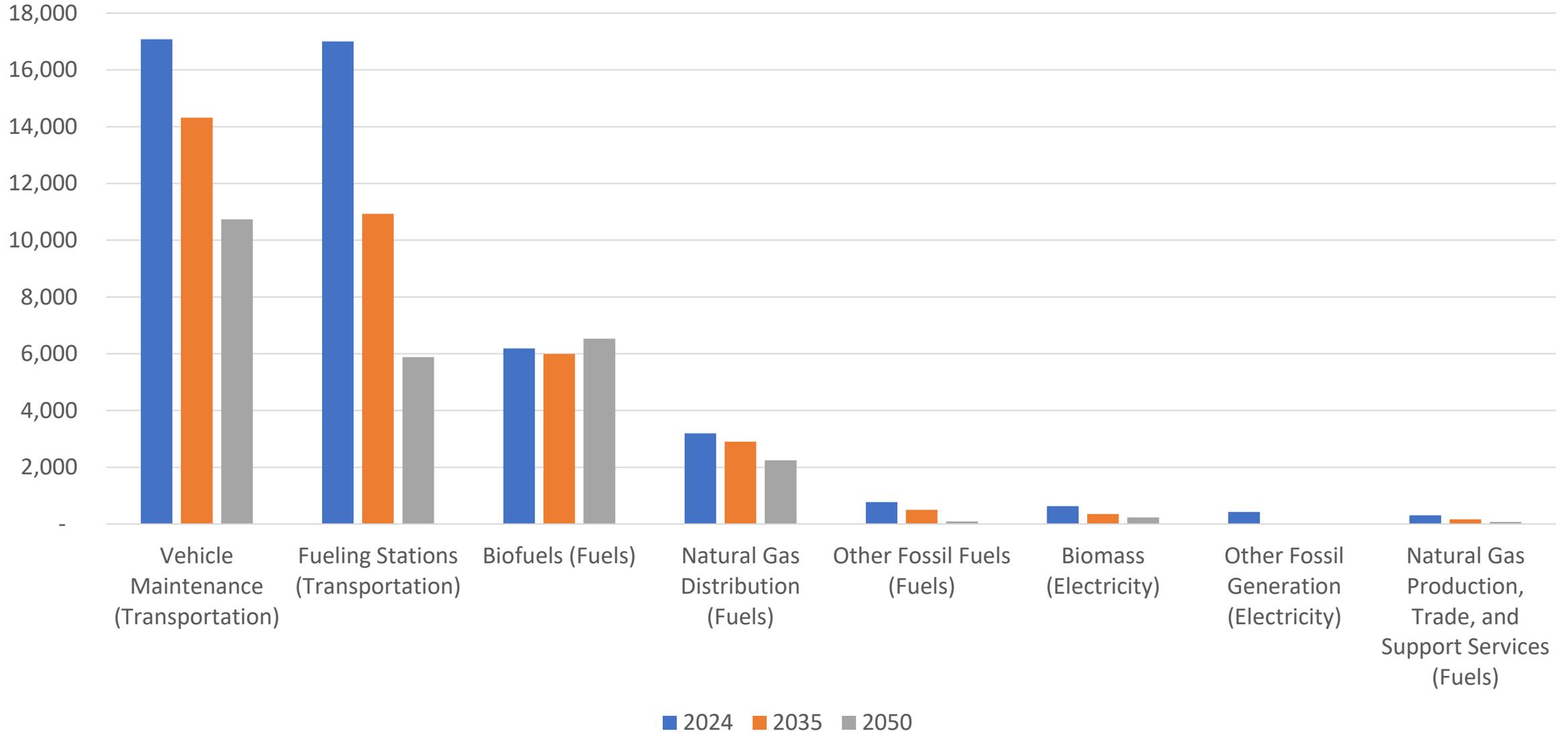
TOTAL EMPLOYMENT: 50% TECH LOAD SCENARIO, OREGON



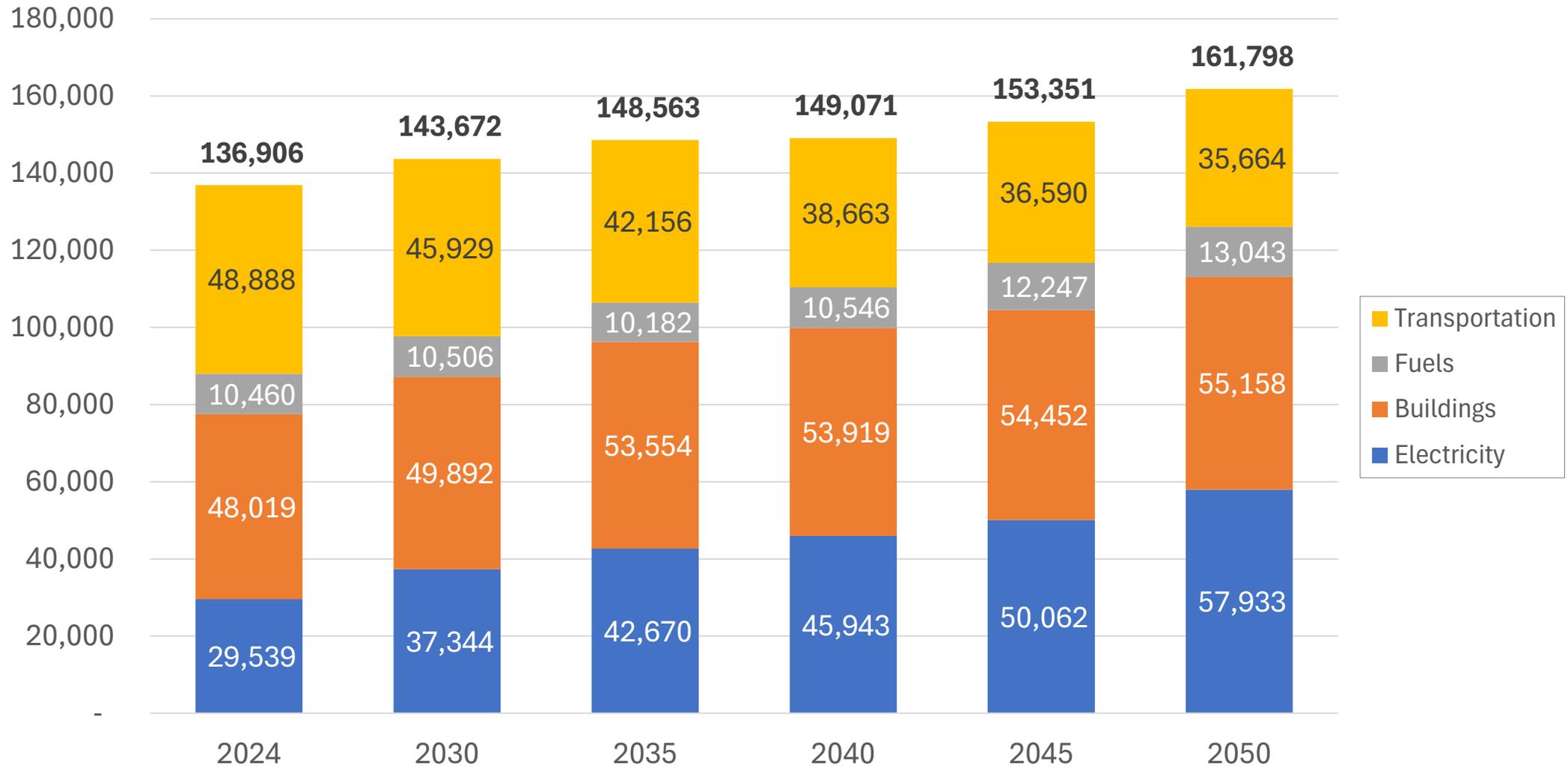
GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, 50% TECH LOAD SCENARIO, OREGON



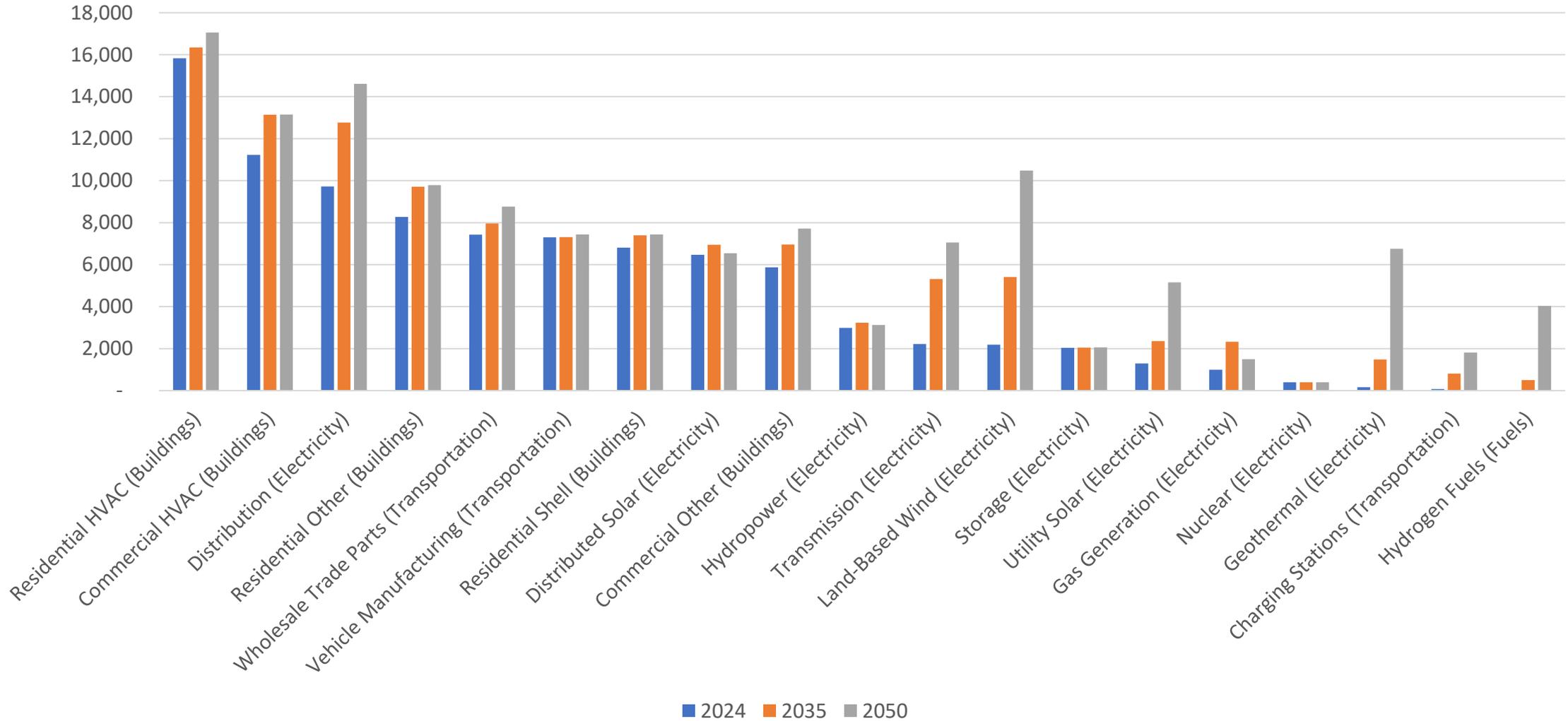
DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, 50% TECH LOAD SCENARIO, OREGON



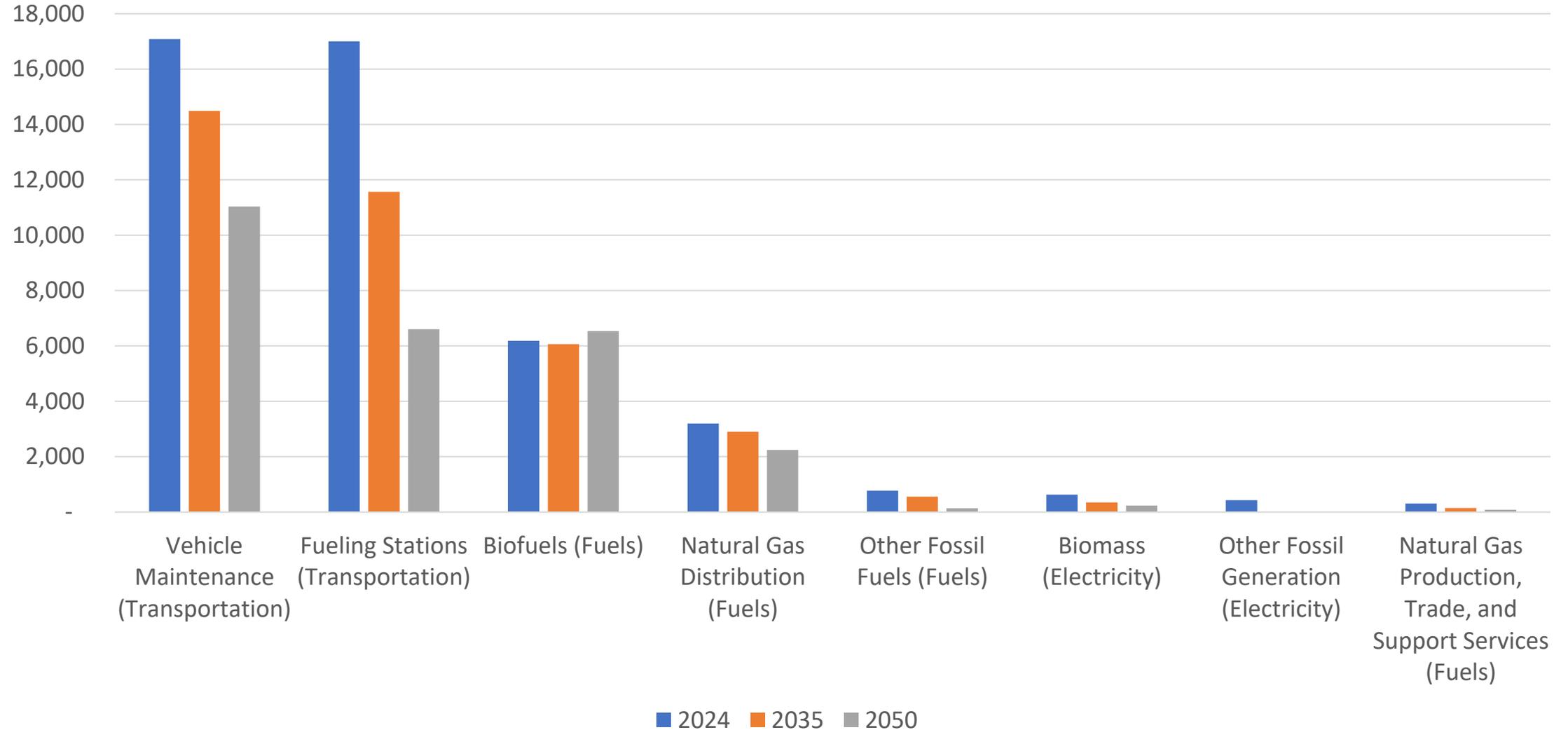
TOTAL EMPLOYMENT, NO ACT SCENARIO, OREGON



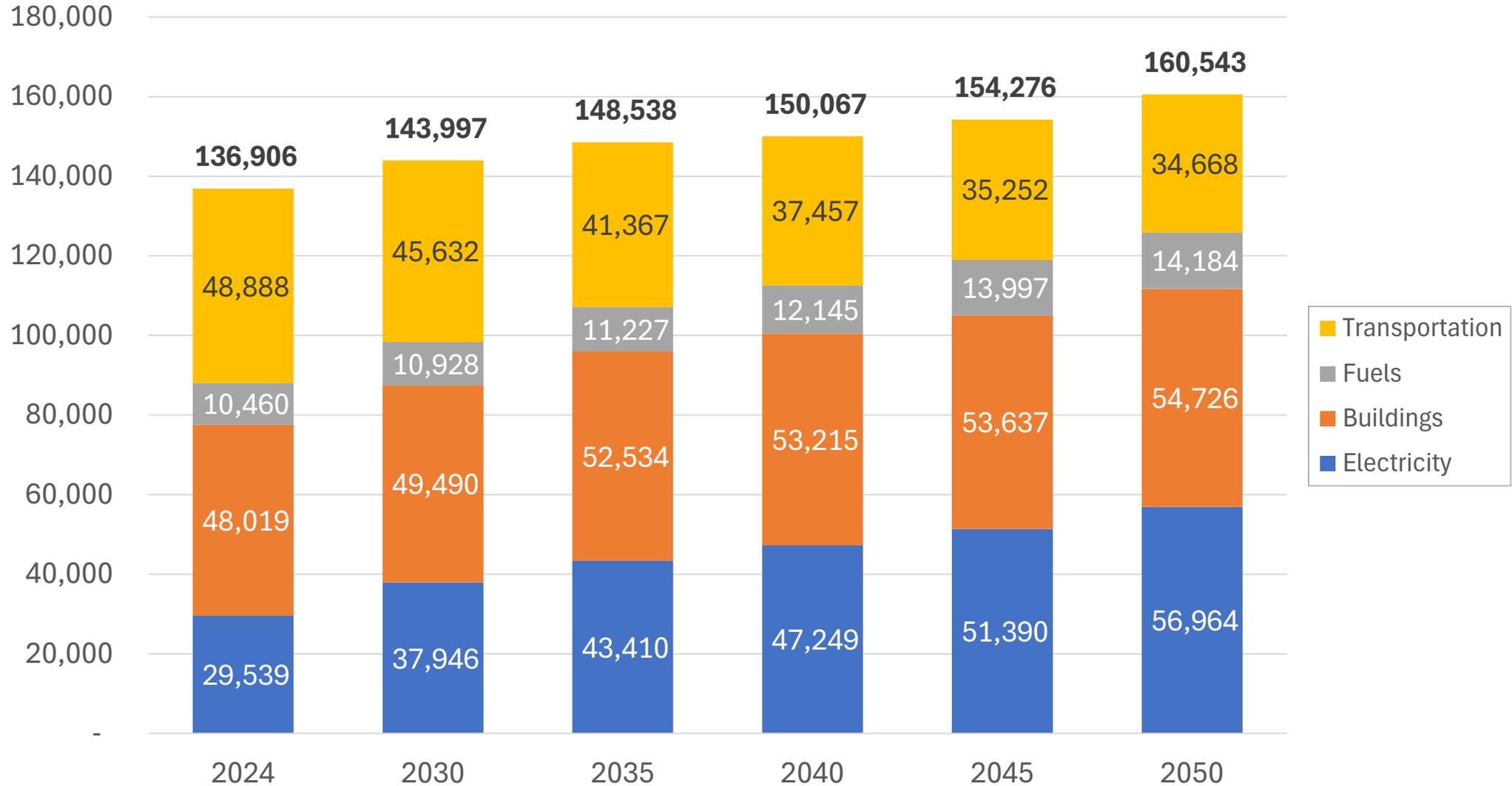
GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, NO ACT SCENARIO, OREGON



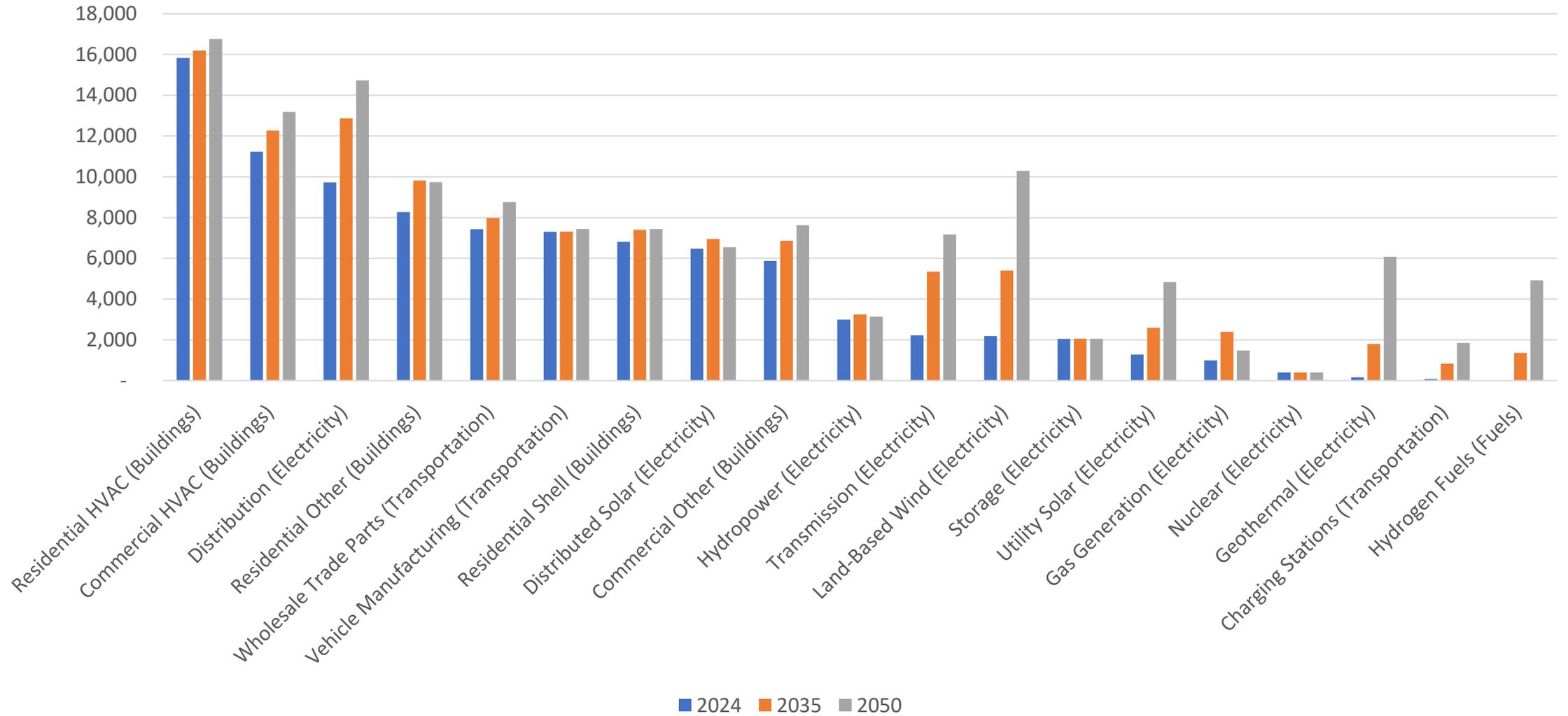
DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, NO ACT SCENARIO, OREGON



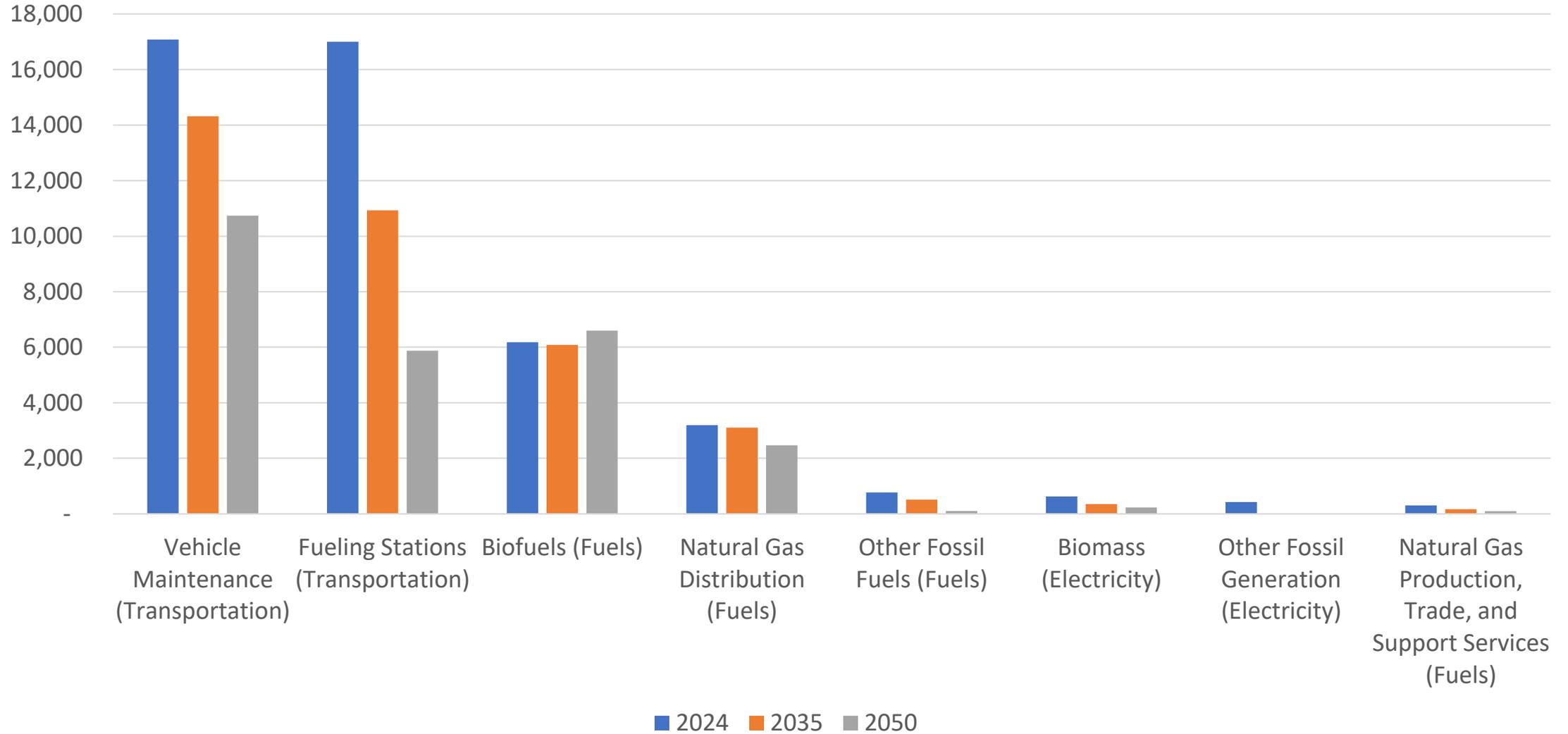
TOTAL EMPLOYMENT, DELAYED EE & BE SCENARIO, OREGON



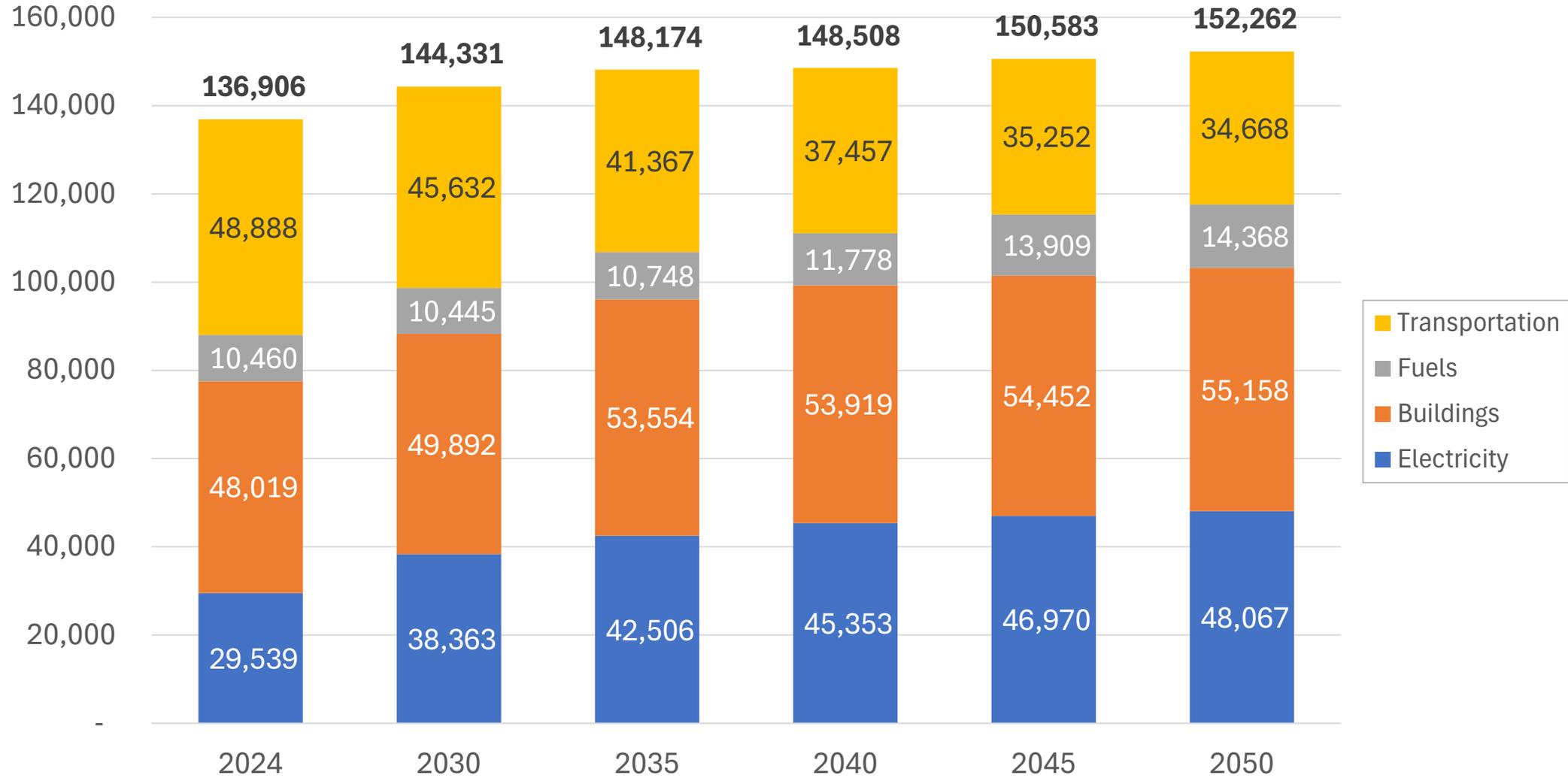
GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, DELAYED EE & BE SCENARIO, OREGON



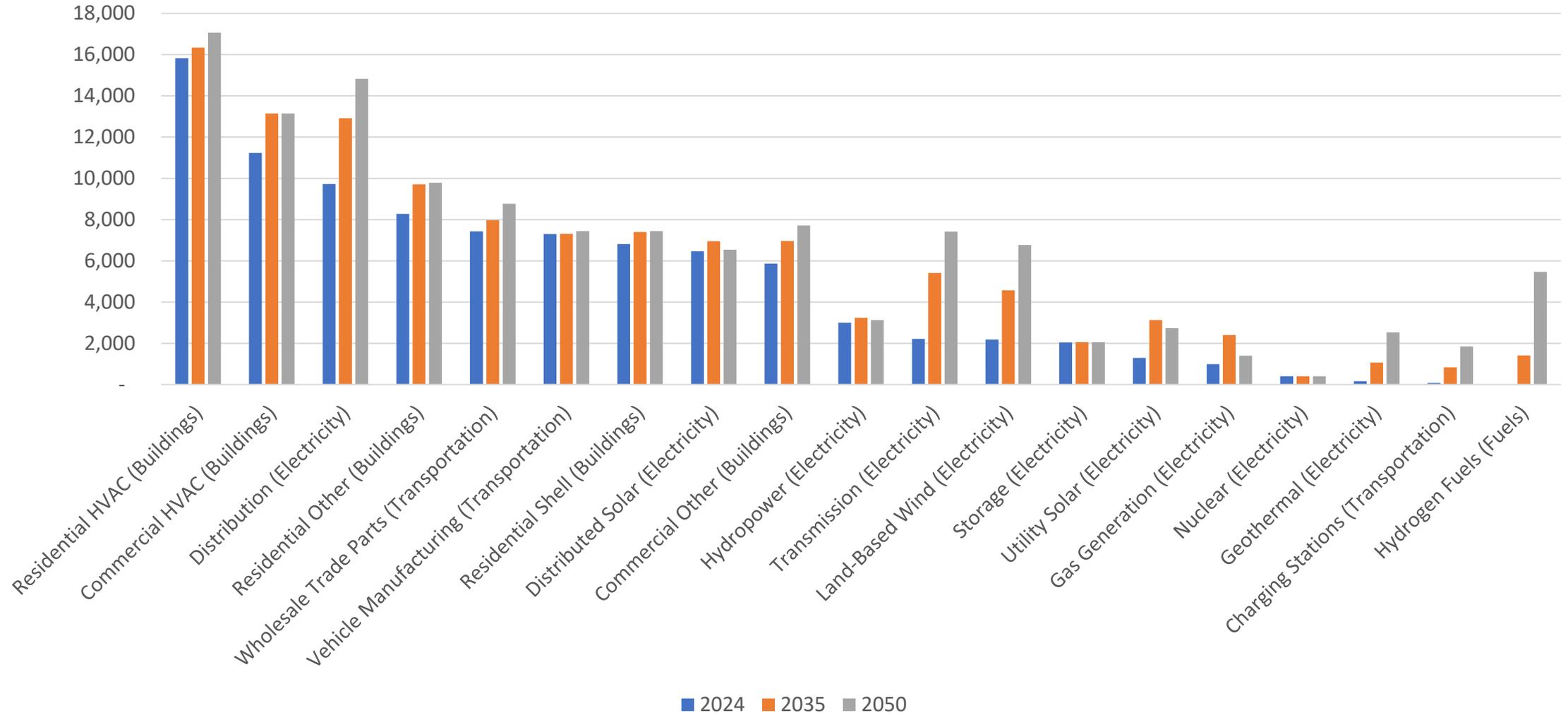
DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, DELAYED EE & BE SCENARIO, OREGON



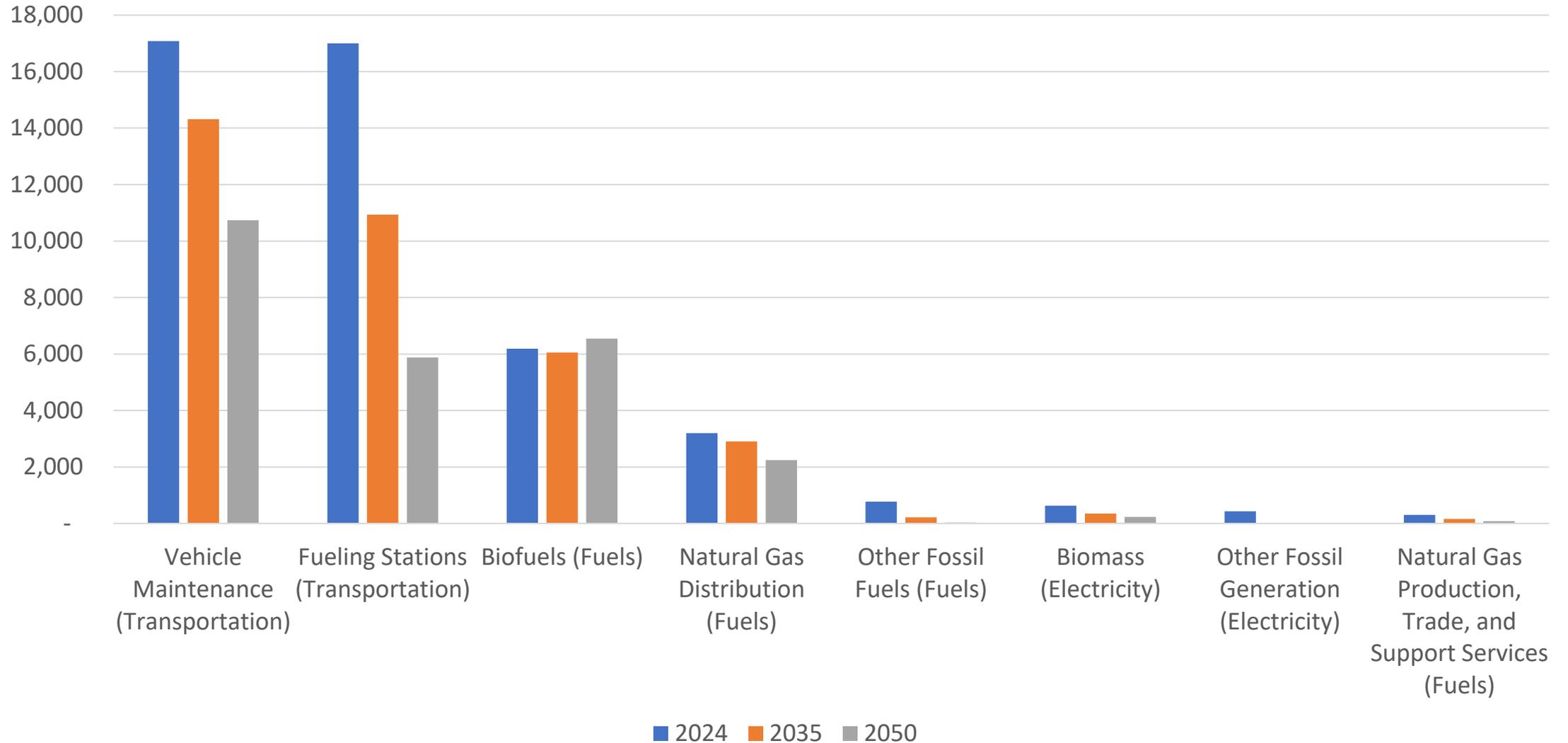
TOTAL EMPLOYMENT, LTD GEN SCENARIO, OREGON



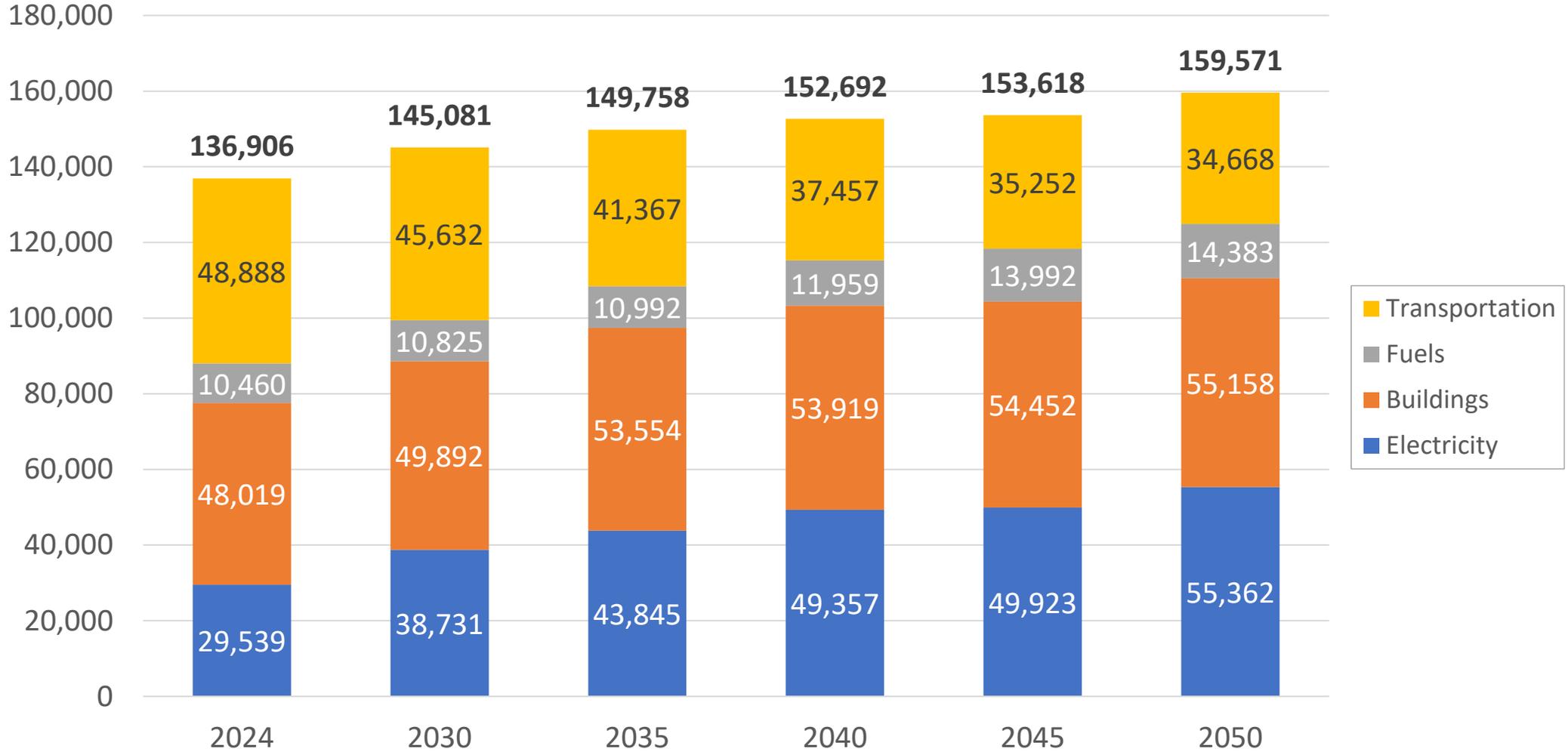
GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, LTD GEN SCENARIO, OREGON



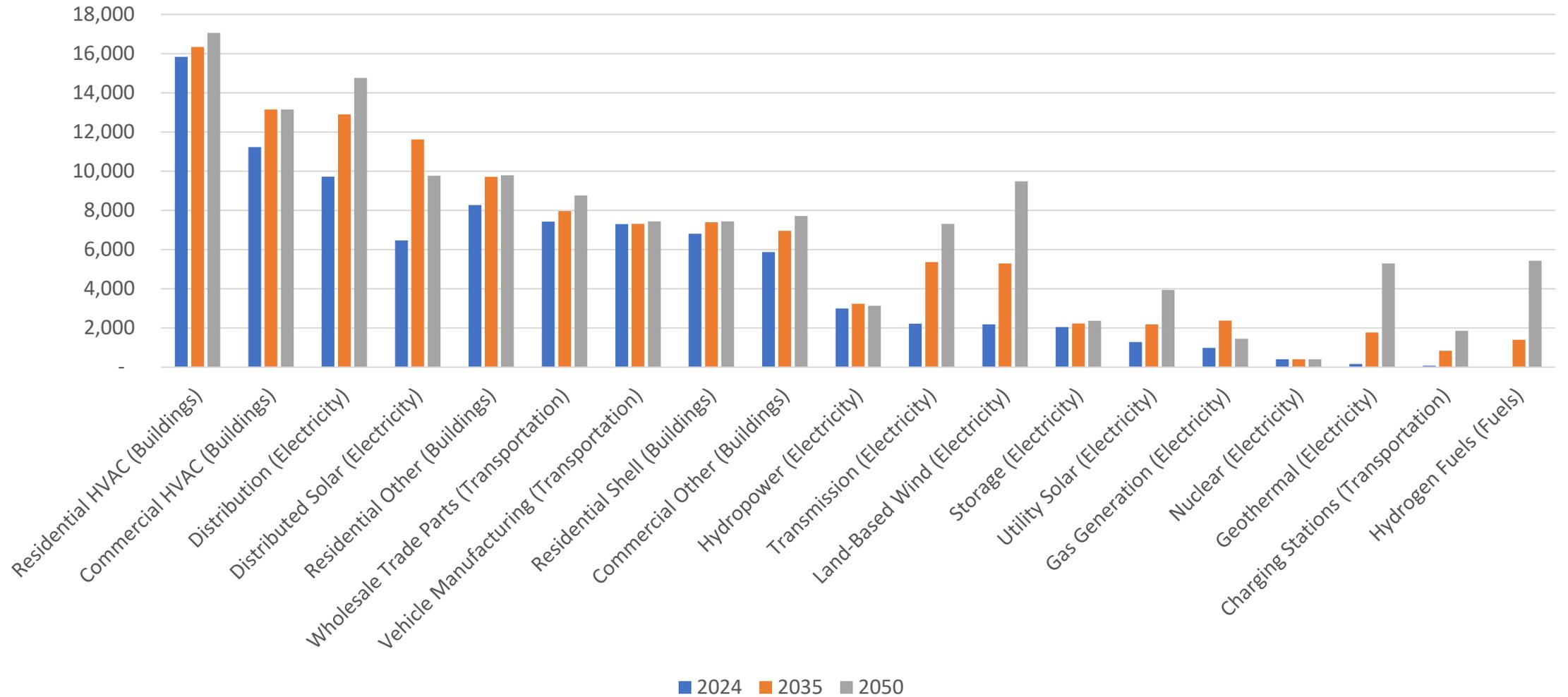
DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, LTD GEN SCENARIO, OREGON



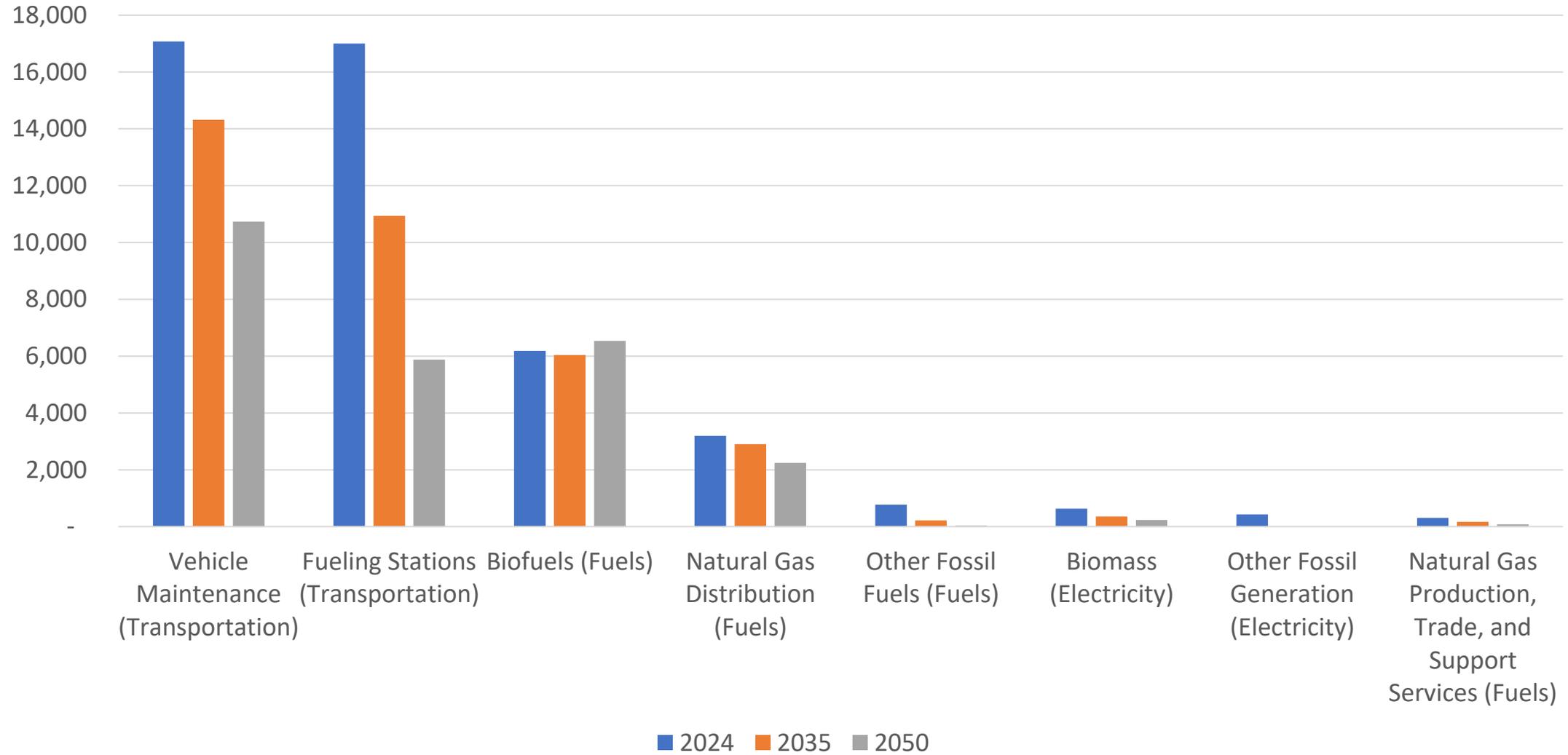
TOTAL EMPLOYMENT, HIGH DER + LTD TX SCENARIO, OREGON



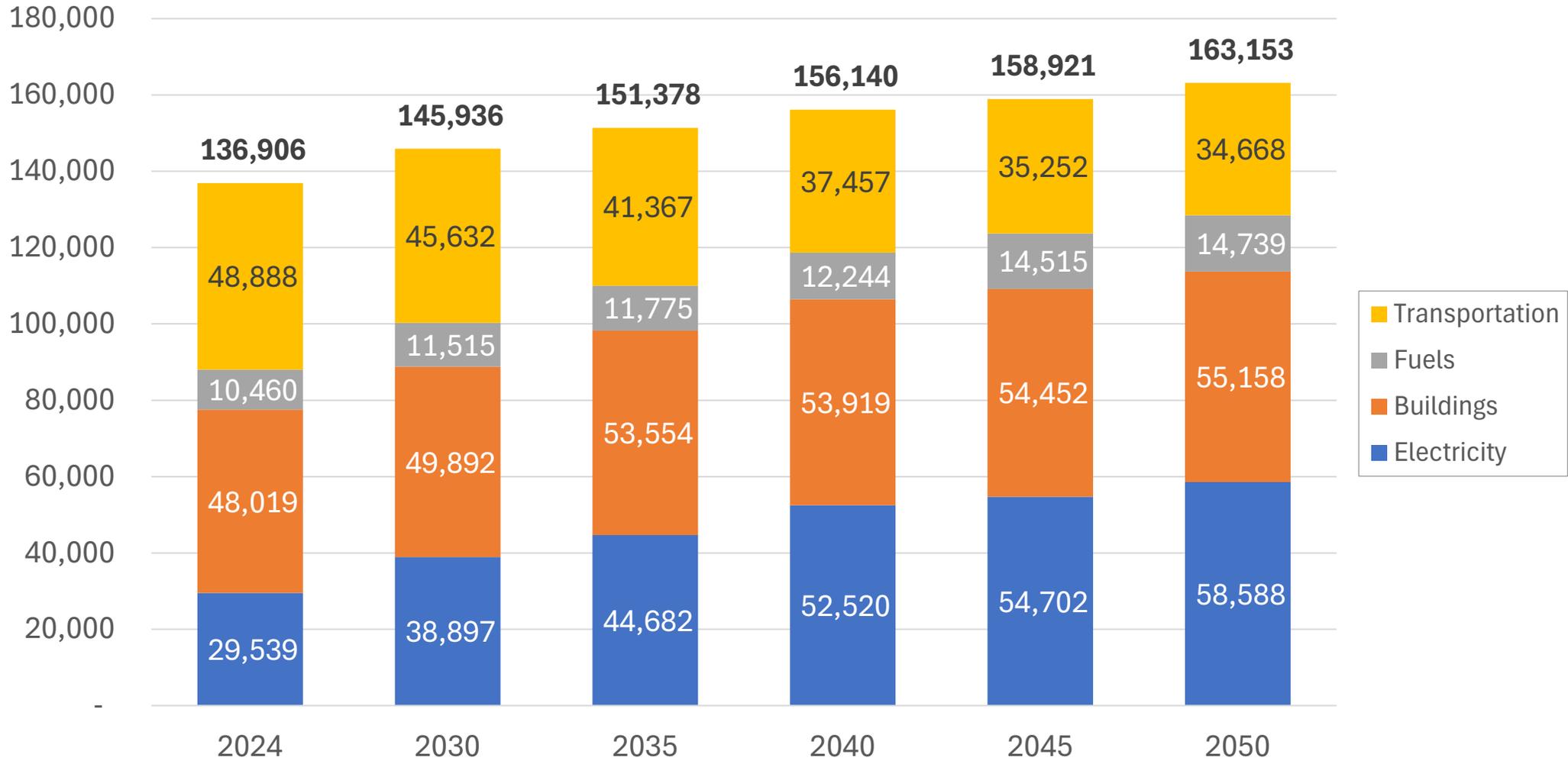
GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, HIGH DER + LTD TX SCENARIO, OREGON



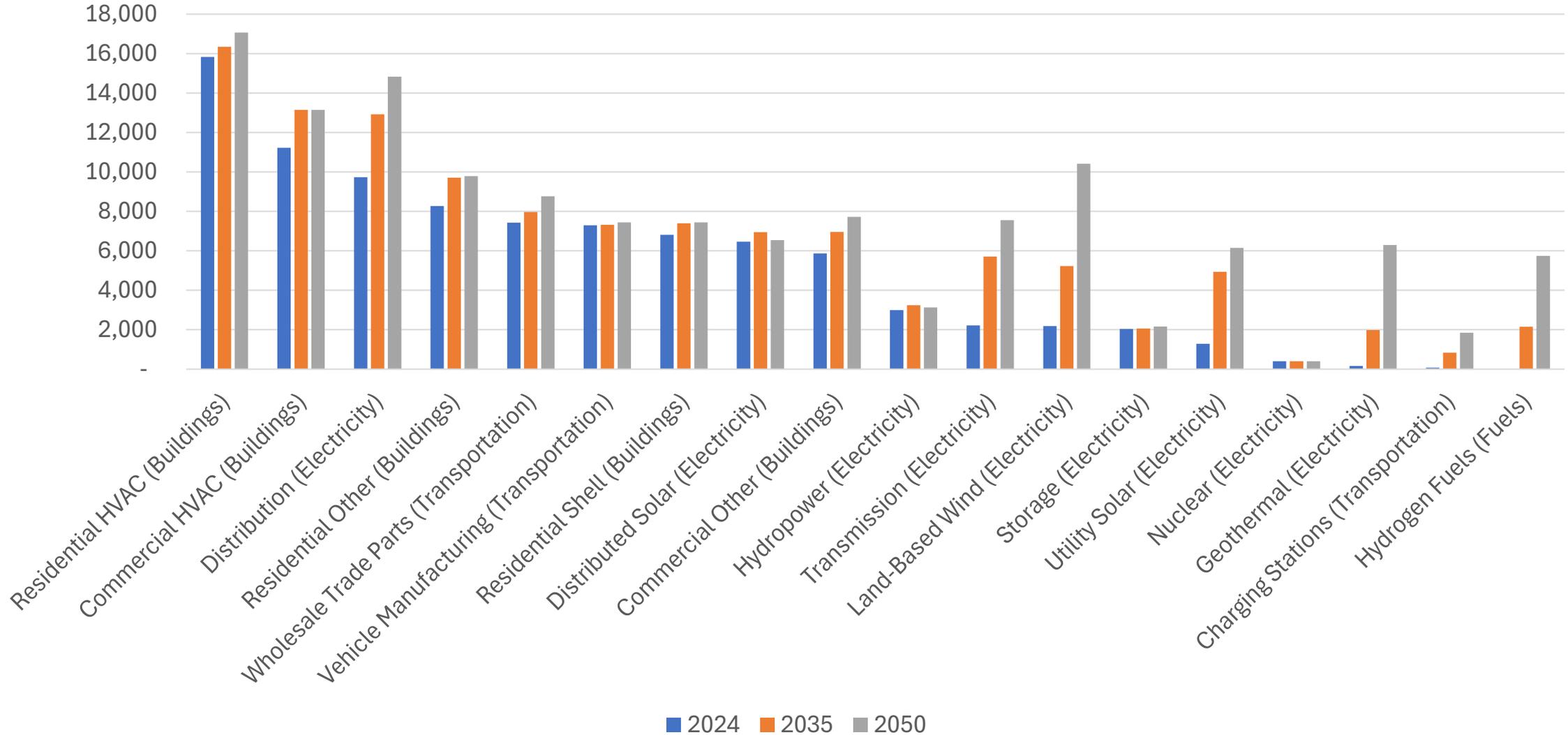
DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, HIGH DER + LTD TX SCENARIO, OREGON



TOTAL EMPLOYMENT, ALT FLEX RES SCENARIO, OREGON



GROWTH SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, ALT FLEX RES SCENARIO, OREGON



DISPLACED SUBSECTORS EMPLOYMENT: 2024, 2035, 2050, ALT FLEX RES SCENARIO, OREGON

