2018 U.S. Integrated Resource Plans (IRP) Report

March 2019

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IRP Background

An **Integrated Resource Plan** (IRP) is a long-term plan outlining an electric utility's resource needs to meet future electricity demand. 33 states require utilities to file IRPs with their state Public Utility Commissions (PUCs). IRP requirements vary by state, but generally address resource needs for 15-20 year planning horizon, with updates made every two to three years.

In analyzing an IRP, **Energy Acuity** (EA) carefully identifies and extracts comments related to potential investment or divestment of the 14 Technology Types listed below:

Coal, Demand Response, Distributed Generation, Energy Efficiency, Energy Storage, Hydro, Natural Gas, Nuclear, Petroleum Fuel, Renewable Energy Credits, Renewables, Smart Grid, Solar, Wind

The comments are classified by **Technology Type, Trending Direction** (Up/Neutral/Down), and **Timeframe** (Short/Mid/Long-Term). A few examples are listed on the next page.

For the purposes of this report, we have sorted the 14 Technology Types into three Groups – **Renewables**, **Grid**, and **Traditional** (see slide 7).

The Major Trends Section (slides 7-10) and Conclusion Section (slides 16-17) looks at all comments across 2018 IRPs, while the Short-Term Trends Section (slides 12-14) only considers comments that will take effect in the next three years, between 2019 – 2021.

Tech Type Trending Comment Examples

1. The Utility is considering a Lithium-ion battery storage resource with a nameplate rating of 10MW and 40MWh to be added to their load portfolio by 2025.

Southwestern Electric Power Company
Tech Type: **Energy Storage** (Grid)
Trending: **Up**
Timeframe: **Mid-Term**

2. The Agency currently averages 970,000 RECs in its inventory per year.

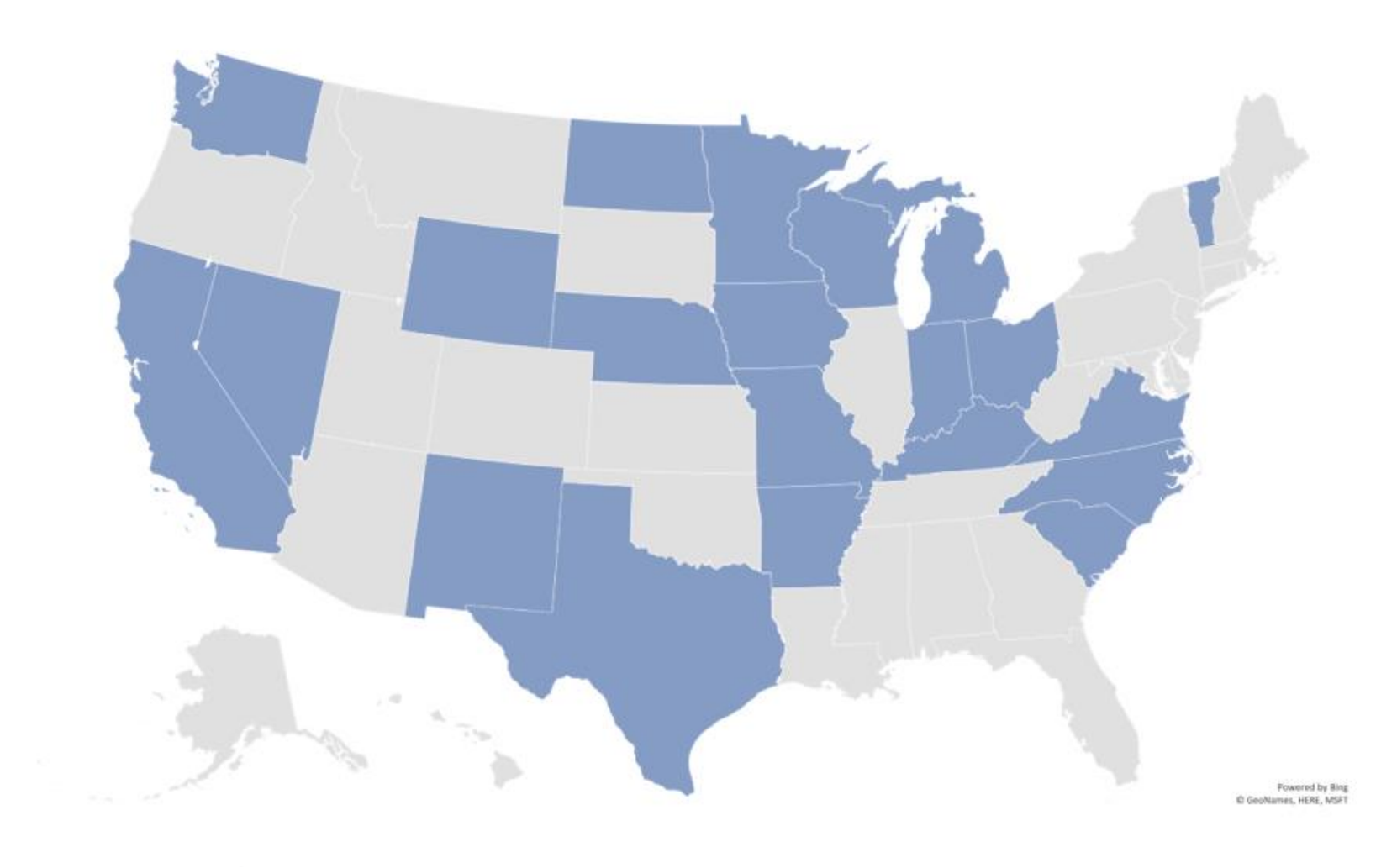
Minnesota Municipal Power Agency
Tech Type: **Renewable Energy Credits** (Renewables)
Trending: **Neutral**
Timeframe: **Long-Term**

3. The early retirement of the North Valmy Unit 1, is expected by December 31, 2021, provided that certain specified conditions are met.

NV Energy
Tech Type: **Coal** (Traditional)
Trending: **Down**
Timeframe: **Short-Term**

***Trending Direction** refers to the direction of investment: **Up** – positive, potential investment, **Neutral** – no mention of investment and **Down** – negative, potential divestment. **Timeframe** groupings include **Short-Term**: 0-3 years, **Mid-Term**: 4-10 years, **Long-Term**: 10+ years or no definitive timeline.

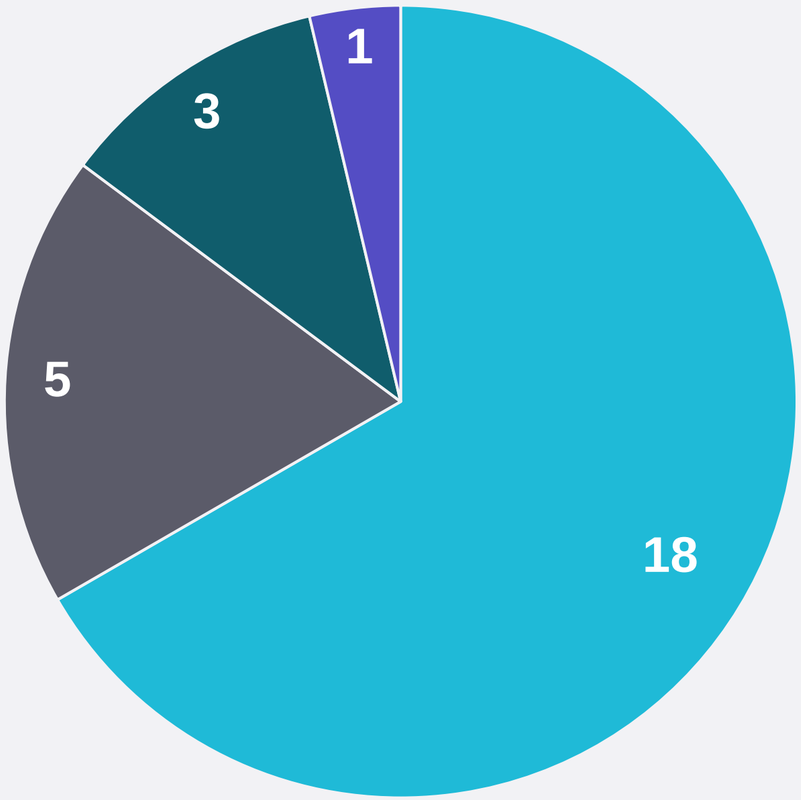
2018 IRPs by State



33 States in the U.S. require Utilities to file IRPs

In 2018, Energy Acuity (EA) analyzed 27 IRPs across 21 of those states

Utility Types



- IOU
- POU
- Co-Op
- Power Marketer

Appalachian Power
Cheyenne Light, Fuel & Power Company
Consumers Energy
Dominion Virginia Power
Duke Energy Progress
El Paso Electric
Green Mountain Power
Interstate Power & Light Company
Kansas City Power & Light Company
Kentucky Utilities
Northern Indiana Public Service Company
NV Energy
Pacific Gas & Electric
San Diego Gas & Electric
South Carolina Gas & Electric
Southern California Edison
Southwestern Electric Power Company
Southwestern Public Service Company

Bear Valley Electric Service
Grant County Public Utility District
Imperial Irrigation District
Minnesota Municipal Power Agency
Nebraska Public Power District

Basin Electric Power Cooperative
Dairyland Power Cooperative
Great River Energy

Constellation NewEnergy

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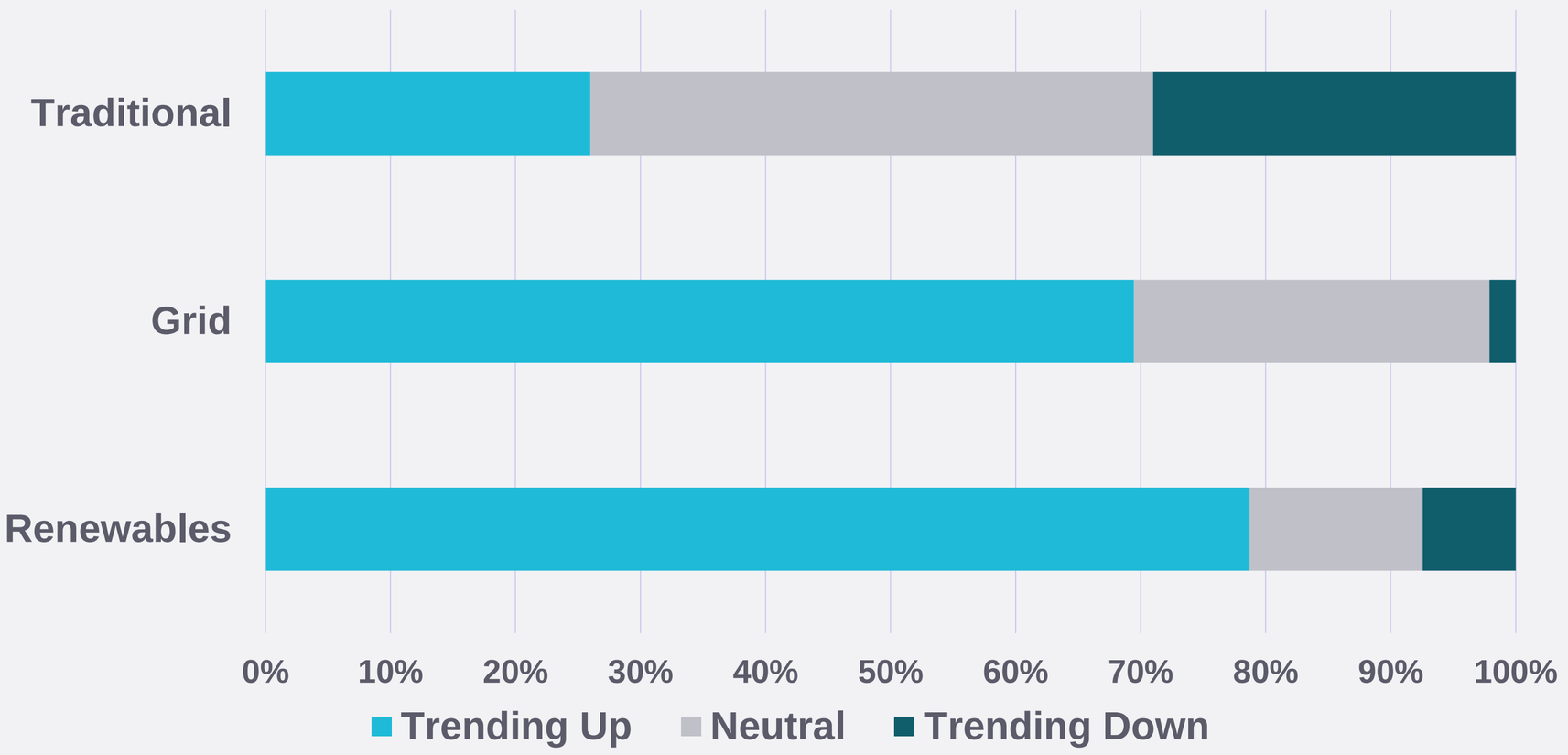
Major Trends
2019 - 2038

Technology Groupings + General Trends



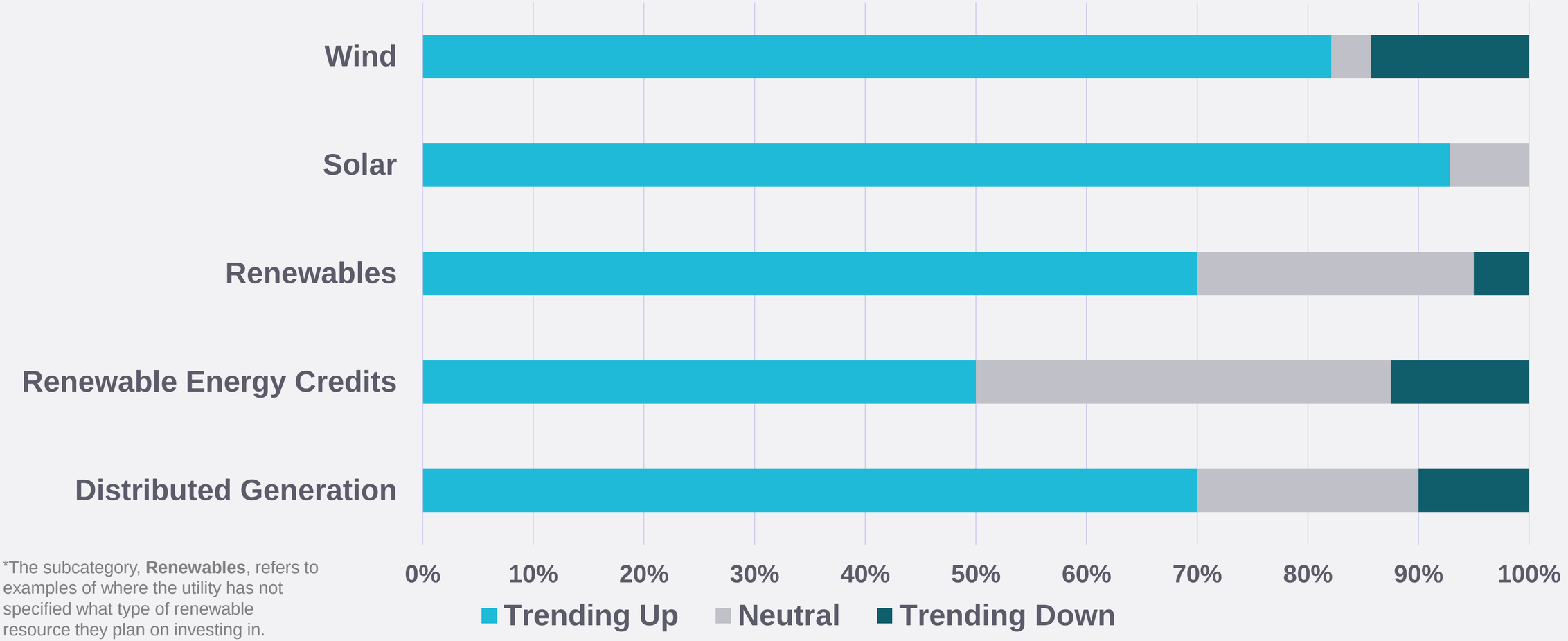
Traditional
Coal
Natural Gas
Nuclear
Hydro
Petroleum Fuel

Grid
Smart Grid
Energy Efficiency
Demand Response
Energy Storage

Renewables
Wind
Solar
Renewable Energy Credits
Distributed Generation
Renewables

Utilities plan on investing significantly more in Renewables and Grid Modernization efforts compared to Traditional resources.

Renewables – Overall Trends



*The subcategory, **Renewables**, refers to examples of where the utility has not specified what type of renewable resource they plan on investing in.

Renewables trends up across all five tech types. The small percentage of negative comments reflects utility's uncertainty in the future cost of Renewables in their long-term resource planning.

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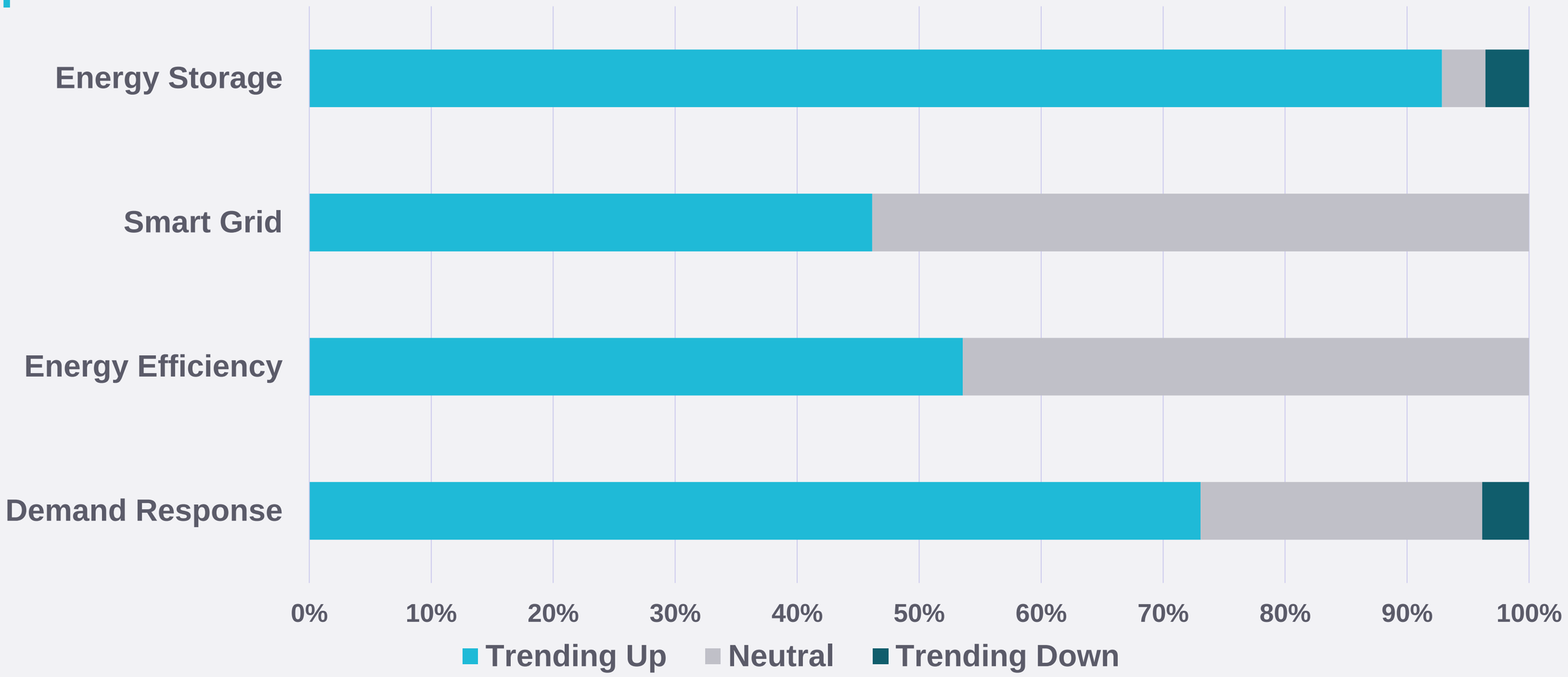
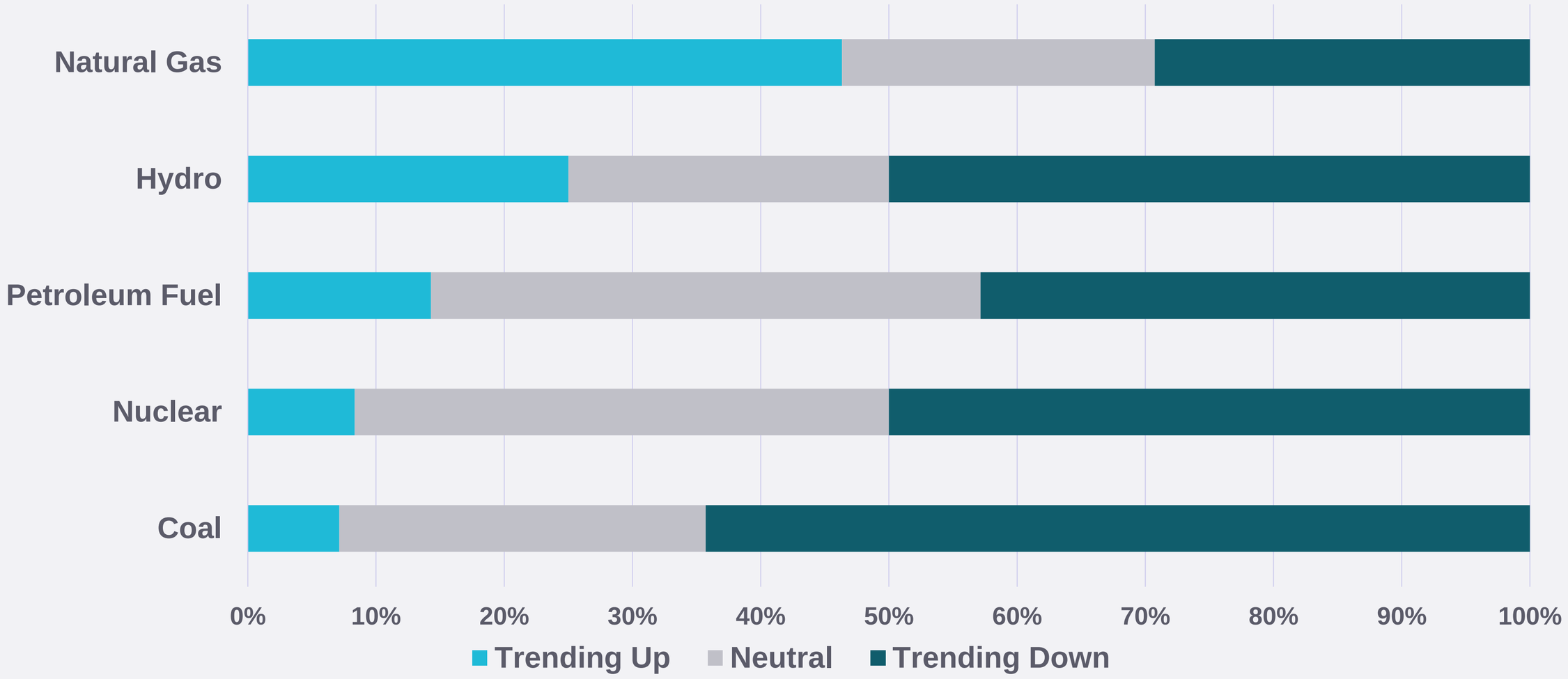
Grid – Overall Trends

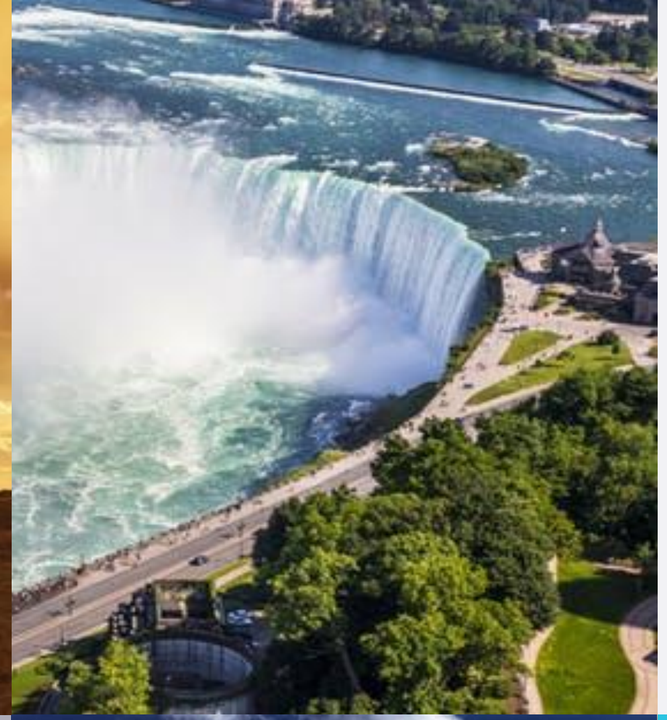


Grid trends up across all four tech types with no negative comments reported for Smart Grid or Energy Efficiency. The high percentage of neutral comments for these tech types reflects how Utilities use IRPs to report on programs they already have in place.

Traditional – Overall Trends



Traditional trends down across all tech types besides Natural Gas. This trend combined with the high percentage of negative Coal comments reflects how Utilities are decommissioning Coal plants and investing in cheaper Natural Gas plants.



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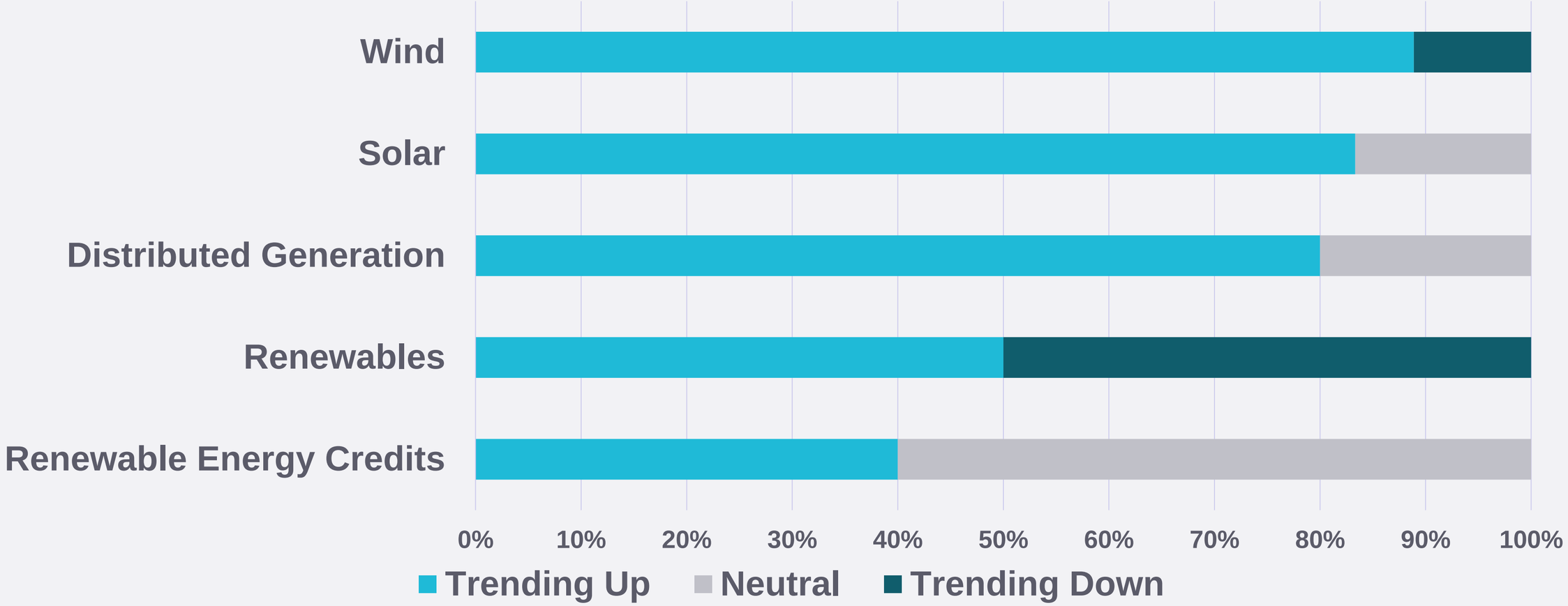
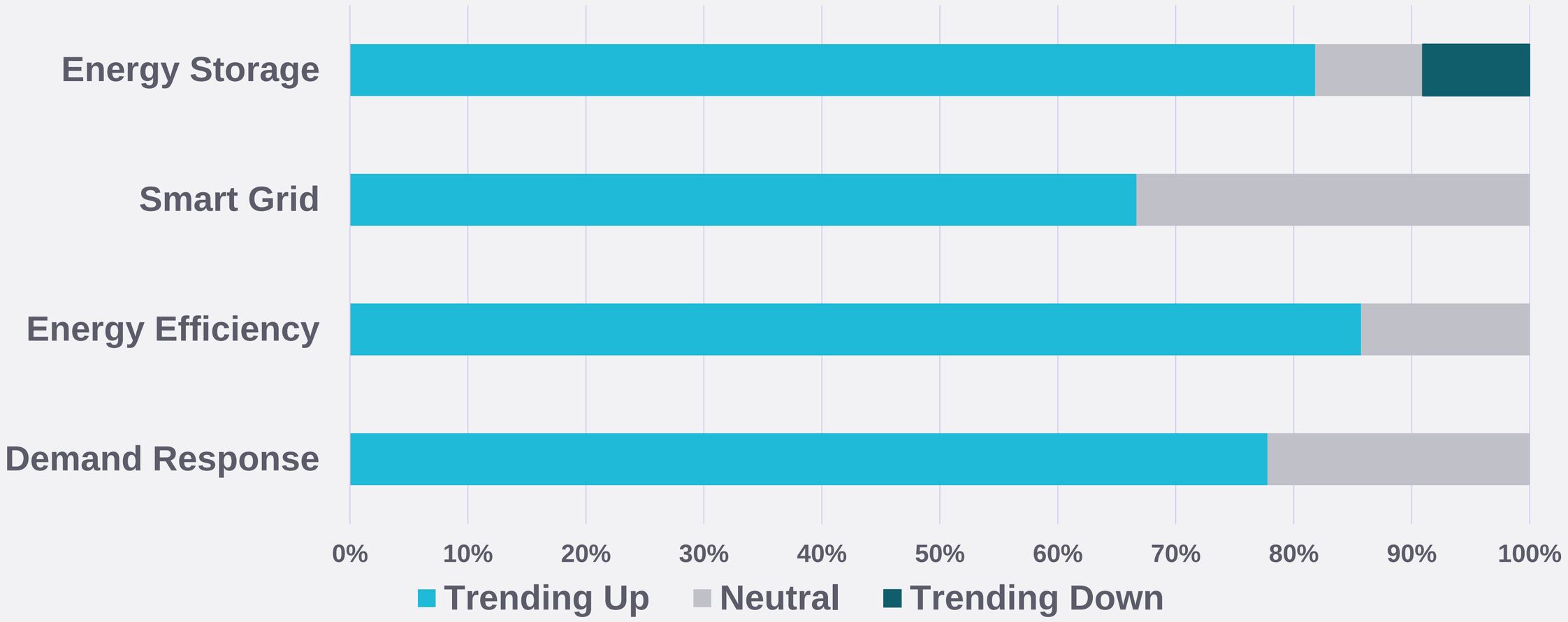
IRP Short-Term Trends 2019-2021 + Conclusion

Renewables – Short-Term Trends



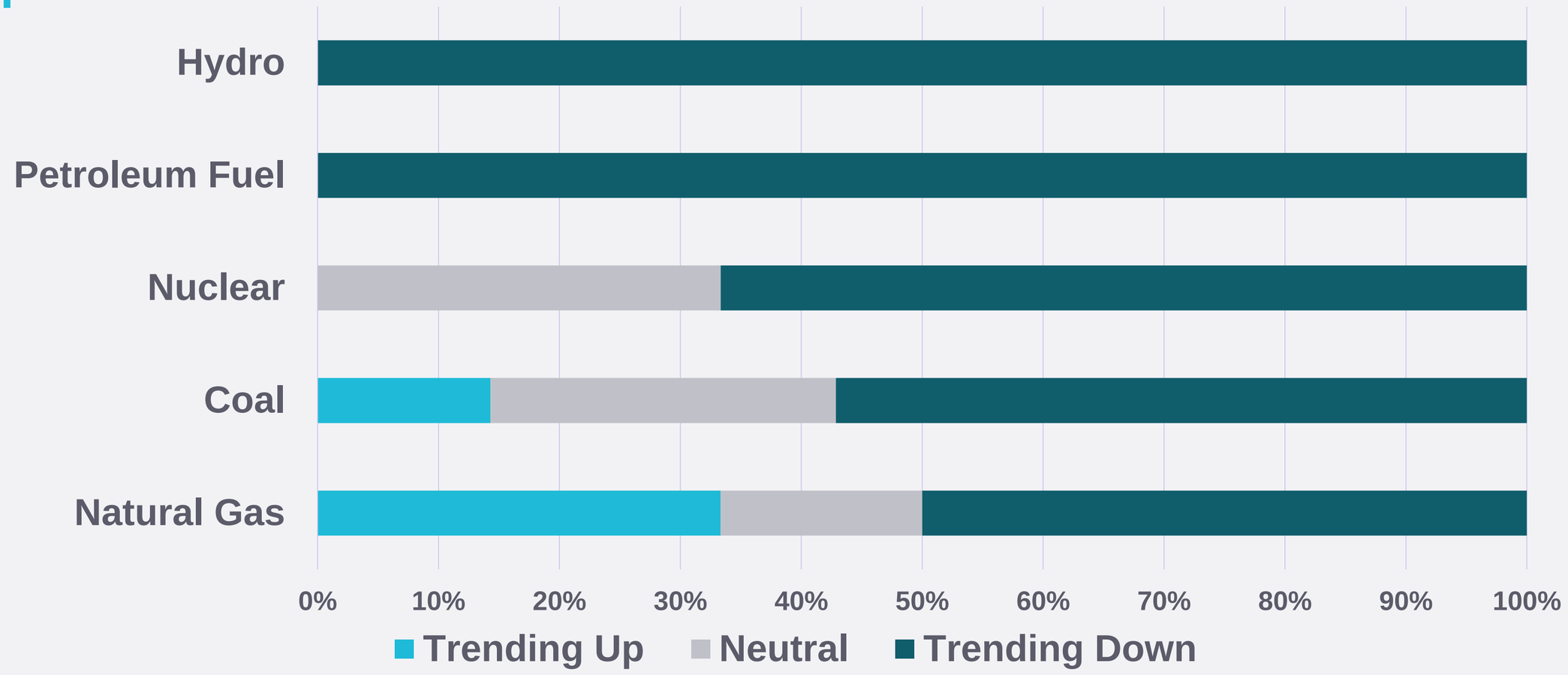
While Wind and Solar trend up strongly in the short-term analysis, the even split on the general Renewables category reflects Southern California Edison's recent efforts to terminate contracts for a combined 181 MW of geothermal energy.

Grid – Short-Term Trends



All Grid technology types are trending strongly upwards in the short-term. Cheyenne Light, Fuel & Power Company's decision to not pursue Energy Storage technology in the near future provided the lone downward trending data point.

Traditional – Short-Term Trends



While Natural Gas trends upward more strongly in the overall trends, it still provides the lone bright spot for short-term traditional power generation technologies in last year's integrated resource planning.

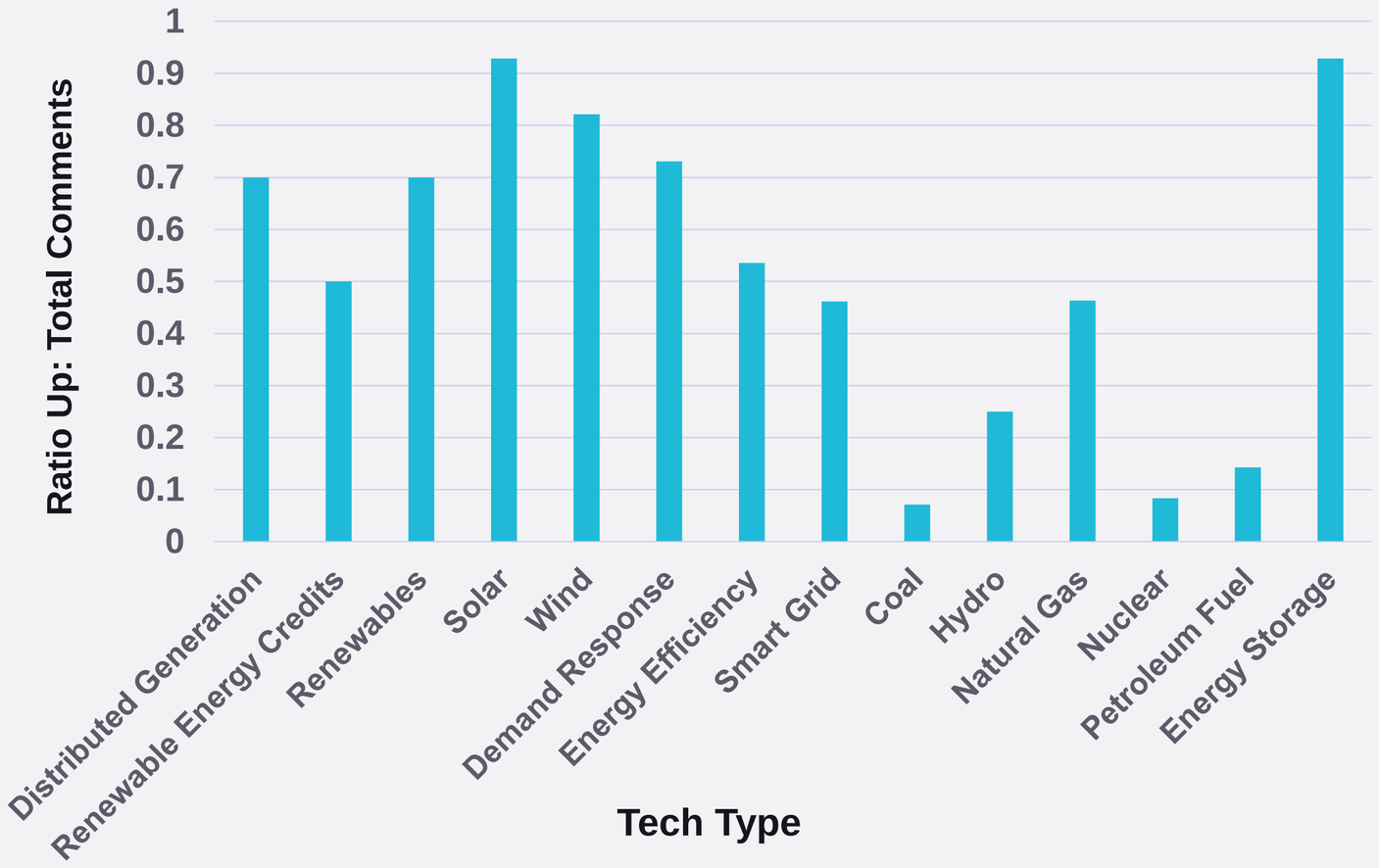
Conclusion – Key Technology Investment

Most Likely to Be Invested In:

1. **Energy Storage**
2. **Solar**
3. **Wind**
4. **Demand Response**

By comparing the number of Comments that are Trending Up to the Total Number of Comments per each Tech Type, we are able to estimate where Utilities plan on investing resources via their 2018 IRPs.

e.g. Solar and Energy Storage have a .92 ratio meaning that 92% of all comments were positive, Trending Up, meaning these Utilities plan to invest resources in Energy Storage and Solar.



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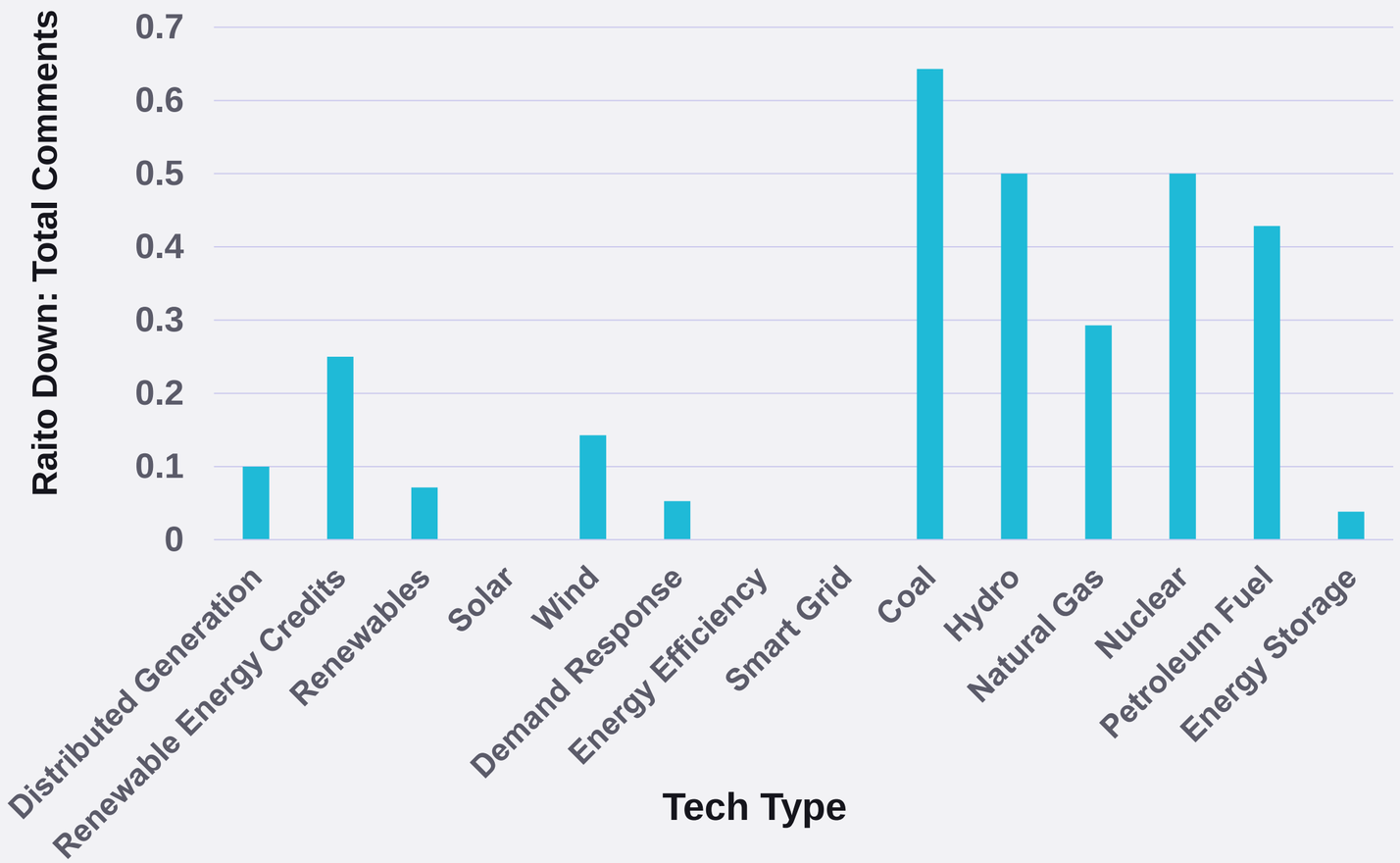
Conclusion – Key Technology Investment

Least Likely To Be **Invested In:**

1. **Coal**
2. **Nuclear**
3. **Hydro**
4. **Petroleum Fuel**

By comparing the number of Comments that are Trending Down to the Total Number of Comments per each Tech Type, we are able to estimate where Utilities plan on diverting resources via their 2018 IRPs.

e.g. Coal's ratio of .64 means that 64% of all comments were negative, Trending Down, meaning these Utilities do not plan on investing resources in Coal.



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