

# North American Energy Investment Opportunities

With Strategic Ideas

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Complimentary White Paper

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## Introduction

North American energy markets have experienced explosive growth over the past few years. Significant opportunities have come with the change from a Republican President to a Democrat. Most notably is the passage of the Inflation Reduction Act of 2022 (IRA), focused on infrastructure and climate change. This huge influx of capital has impacted growth in many sectors. In addition, some 20 states have passed climate legislation toward Net Zero. Even if the next election reverts to a Republican President, we believe the growth opportunities will still be valid.

An overriding theme of the growth opportunities within this paper reflects the transition to Net Zero. This push has also created some distress opportunities, especially if you believe as this author does that the grid cannot operate on a 100% renewable with BESS and no fossil fuels at all.

This paper provides a brief overview of the areas we see as offering viable opportunities with the highest growth potential, or distress opportunities most likely to generate a solid return on investment. We also offer some strategic insights into each area. If the reader would like a deeper analysis of any of the opportunities listed in this paper, you are invited to schedule a video meeting with the author.

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## Growth Opportunities

This sampling of growth opportunities is by no means exhaustive. The opportunities shown here were selected by the author based on the view that each of them has long term appeal. The text for each category is at a high level. Specific strategies are discussed for each category.

### Renewable Assets – Repowering Strategy

Everyone is aware of the boom in developing new wind and solar farms. In fact, more renewable projects have been announced than the entire capacity of existing fossil, nuclear, and hydro generation. Realistically many of these announced projects will never get built.

The investment climate for utility scale renewable projects is red hot with a crowd chasing every deal. In general, this means very high valuations with risk profiles that are challenging to justify. It's hard to get excited about jumping into the new-build deals at the currently inflated values.

There are many risks to new build projects. Examples include:

- Offtaker (PPA) price – most projects do not come with a PPA, so power sales price is subject to wholesale market volatility.
- Development stage – if the project doesn't have approved transmission access, it's very risky. The backlog for transmission access approval can be as long as five years.
- Near COD – these are the most expensive as the project has de-risked everything except the PPA.
- Location – many factors here, curtailment risk, ISO spot prices, state legislation, to name a few.

A niche exists within renewable asset development that can be much more profitable and less risky: repowering. **Repowering takes an old wind or solar farm and upgrades the equipment (substation, turbines, PV, etc.).** These are sites that are 15 or more years old, already have transmission, are permitted for wind/solar, typically have excellent wind or solar conditions, and the PPA has expired. In most cases the facilities are either barely or not even operating.

| Market     | # Turbines Over 15 Years Old | # of Wind Farms Over 15 Years Old |
|------------|------------------------------|-----------------------------------|
| US         | 11,286                       | 272                               |
| California | 4,146                        | 51                                |

Within the repowering niche, California is especially advantageous. Focusing on wind for now, there are **51 sites in California older than 15 years with turbines** (if they are working) with turbine sizes less than 1 MW. Most of these sites were originally developed by small local developers and are still owned by them. The large national developers building 100 MW and bigger sites are not pursuing these projects because generally an entire repowering site might be 80 MW or less.

Another reason California is attractive is the state's net zero law (unlike Texas for example). **PPA prices in California tend to be higher than PJM prices and double or more Texas prices.**

California renewable credit prices are the highest in the US. These sites would also be good candidates for adding solar and battery assets to take advantage of California's price swings between afternoon and early evening.

## Hydrogen

With \$8 Billion in IRA subsidies available, the rush to build hydrogen hubs has created several partnerships and state funded programs designed to pursue the hub strategy. **The map below depicts where the various "announced" hubs are located.** These locations were selected due to a combination of factors including renewable supply sources, state Net Zero mandates, existing gas pipeline infrastructure, state regulatory acceptance and potential export sites. This author is dubious



**Figure 1: Hydrogen Hub Map**

**Unless as an investor you are willing to make a long-term bet on hydrogen hubs, we suggest a different approach to investing in a hydrogen hub.**

We think investing in the **infrastructure and equipment** needed for the hydrogen market has a somewhat less risky profile, plus these investments can be leveraged in many markets, not just a single hub.

The strategy we like best is based on using hydrogen for power generation via the natural gas infrastructure that already exists. Our gas pipeline clients have indicated up to 10% of hydrogen can be added to natural gas without affecting users. Because this strategy can be implemented more quickly than others, such as hydrogen for transportation, we believe the risk is much lower. This can also be implemented globally.

**Investment in technologies that enhance co-firing with hydrogen for gas plants, as well as measurement and control technologies are areas we find the most interesting.**

that all these hubs will be built. The two that make the most sense are California and the Gulf Coast.

Strategically, a hydrogen hub partnership is a long-term investment with many unknown attributes. Key project and economic hurdles such as supply cost, demand, infrastructure requirements, and state regulatory and permitting requirements, make ROI a pure guess.

## BESS

No doubt there is a boom in utility-scale batteries. This is especially true in markets where solar has driven afternoon spot prices to near or below zero. BESS enables a time shifting strategy to store renewable generation at low prices and sell it at a better time and higher price. This strategy isn't new and will no doubt grow in both North America and Japan. Our issue with this strategy is that **we believe it will be a matter of several years before utility scale batteries in North America are overbuilt** and the afternoon time shifting game will diminish significantly. This places medium- and long-term investments at risk if the BESS project depends on time-shifting revenues.

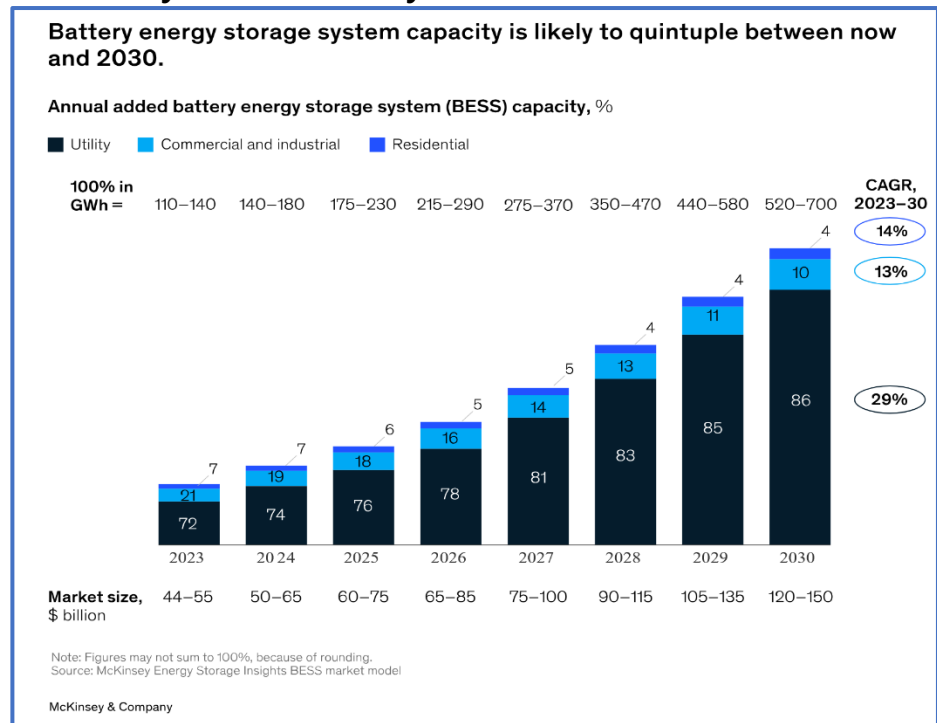
We prefer a BESS strategy for **utility scale sized batteries behind the meter at industrials, data centers, and warehouses** (see Fleet EV Charging Section). This market is projected to have an 18.4% compound annual growth rate in the US.

One of the reasons we like this strategy is that the EIA reported that customers experience outages in the US an average of five and one-half hours per year. In some markets that figure is much higher (Texas, California).

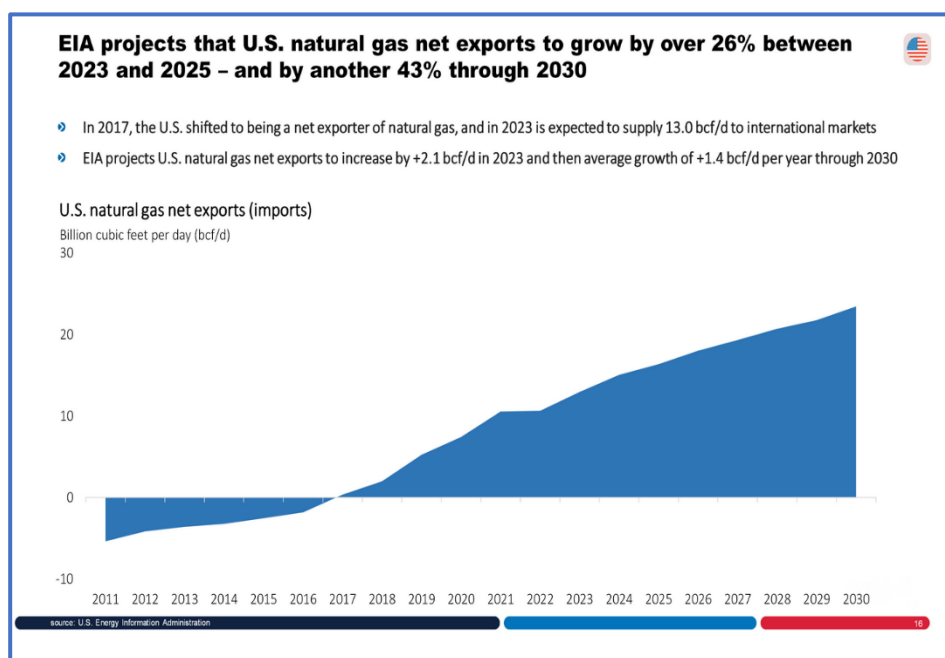
**These customers can also take advantage of wholesale market price swings and optimization strategies if they have a battery.** Additionally, BESS addresses outage risk management for these customers which, as stated above, is a common and expensive issue in the US.

## Natural Gas Trading

**This opportunity makes sense for Japanese companies importing LNG.** The reason being that a company buying LNG at the US LNG terminal is missing opportunities to lower or optimize purchase prices as well as to take advantage of flexibility. **The value chain for natural gas before it reaches an LNG terminal is ripe with opportunities to buy, sell, or trade gas anywhere a pipeline can transport it to an LNG terminal.**



**Figure 2: Battery Storage Capacity**



**Figure 3: US Natural Gas Exports**

flexible than when LNG is in cargo ships. While cargoes can certainly be traded, the flexibility is more limited than trading within the supply chain before it becomes LNG.

With export growth, the opportunity to optimize is significant if the value chain from wellhead to LNG export terminal is the focus rather than buying at the terminal.

## EV Fleet Charging

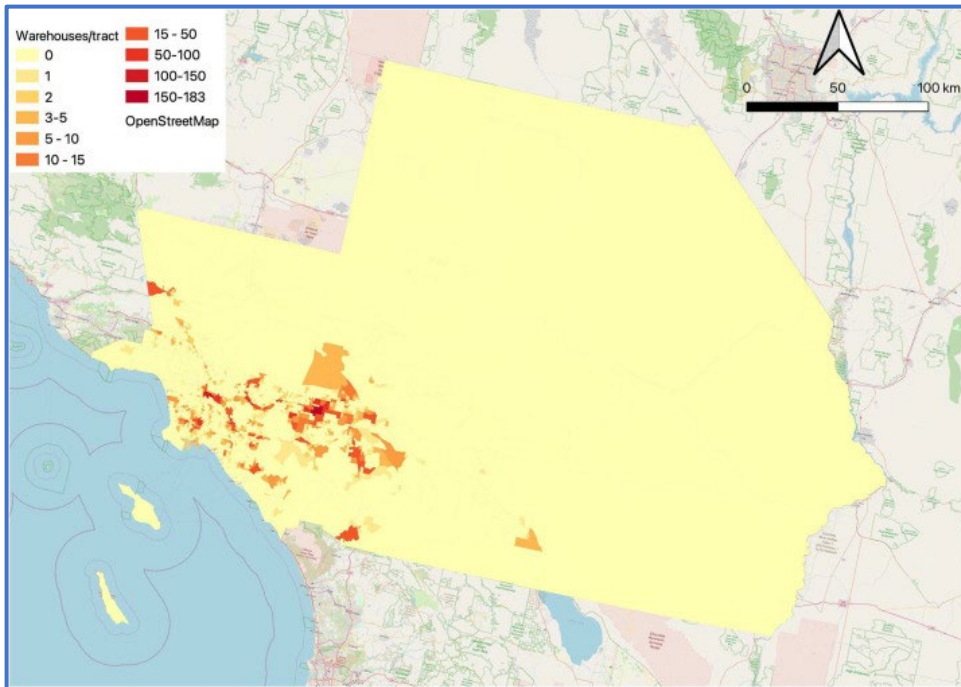
EV charging station growth is obvious across several sectors of the EV value chain. The IRA money for EV charging is designed to create a nationwide charging network primarily for cars and light trucks. There are already many companies and equipment manufacturers in the vehicle charging business chasing the nationwide network opportunity.

**We think fleet charging is less crowded and an easier business to enter.** Within EV fleet charging, a strategy aimed at **port and warehouse hubs** is potentially very profitable and can include energy components other than just charging. This entails installing multiple level 3 units (fast charging) at a warehouse for use by tractors going to and from the port and the warehouse. In California, the ports of Long Beach and Los Angeles have more than 65,000 trucks per day with most going to the over 34,000 area warehouses.

California's aggressive climate laws create a lot of pressure to convert these tractors to EVs. The ports themselves do not have enough land to install hundreds of charging stations, so the obvious place to install them is at the warehouse.

Prices can also be hedged in a very liquid futures market. Several strategies can lower the cost, including buying at the wellhead, entering swaps between production and delivery locations and a separate trading market for pipeline capacity and storage.

From a flexibility standpoint, LNG supplies can be sourced, traded, swapped, and other strategies based on demand in Japan. This is much easier and more



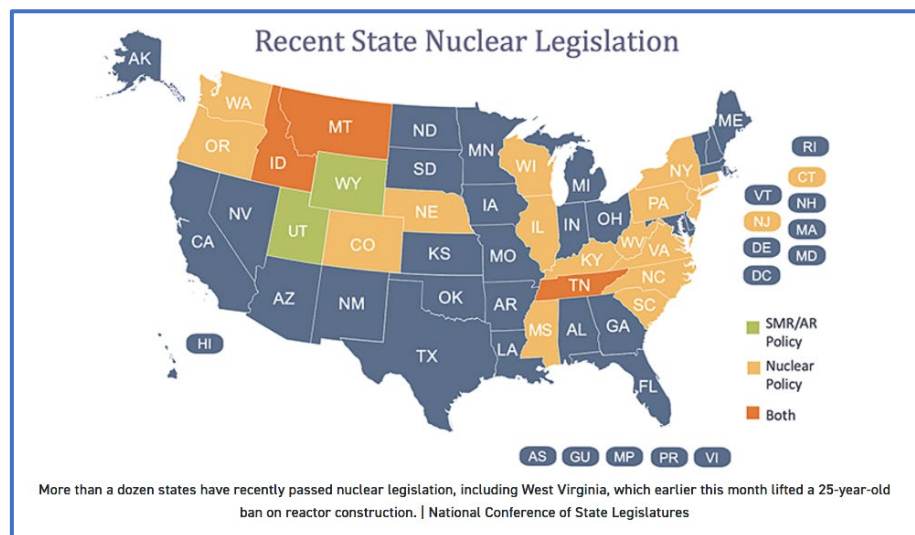
**Figure 4: Southern California Warehouse Map**

Installing that many EV chargers at warehouses, while needed, **creates additional energy opportunities**. First is the fact that the local utility, SCE, does not have the power or infrastructure to handle this new load, so warehouses will need to install **onsite generation** and very likely **batteries**. All sites have expansive rooftops for solar and space for batteries. This market is also a candidate for hydrogen fuel for either tractors, forklifts, or onsite generation.

## Small Modular Nuclear

After years of anti-nuclear sentiment, nuclear is currently gaining favor with environmentalists and state energy regulatory agencies. **The Nuclear Energy Agency calls for a tripling of nuclear capacity in the US by 2050**. This bodes well for existing nuclear plants (see Existing Nuclear Section in Distress). Achieving that forecast will require many small modular reactors (SMR).

In their early days, SMRs are experiencing choppy acceptance by off-takers reluctant to pay the long-term premium prices SMRs require. Additionally, the design model, engineering, and construction attributes are still in unproven stages.



**Figure 5: State Nuclear Legislation**

Even with the uncertainty, we expect both federal and state governments to subsidize SMRs to support early-stage developments until the technology, engineering, and construction costs and uncertainty have become more predictable. Perhaps more importantly, government support is necessary for SMRs to reach economic viability.

Depending on your viewpoint, to truly reach net zero and maintain 100% grid reliability either nuclear or some form of hydrogen generation will be key.

## Distress Opportunities

The primary reason the opportunities in the Distress section were selected is the author's belief that while out of favor, there is value at the right price. While governments and environmentalists would like each of these to go away, the author's opinion (yes, he believes in global warming) is that the grid and economy will need these assets for many years to come.

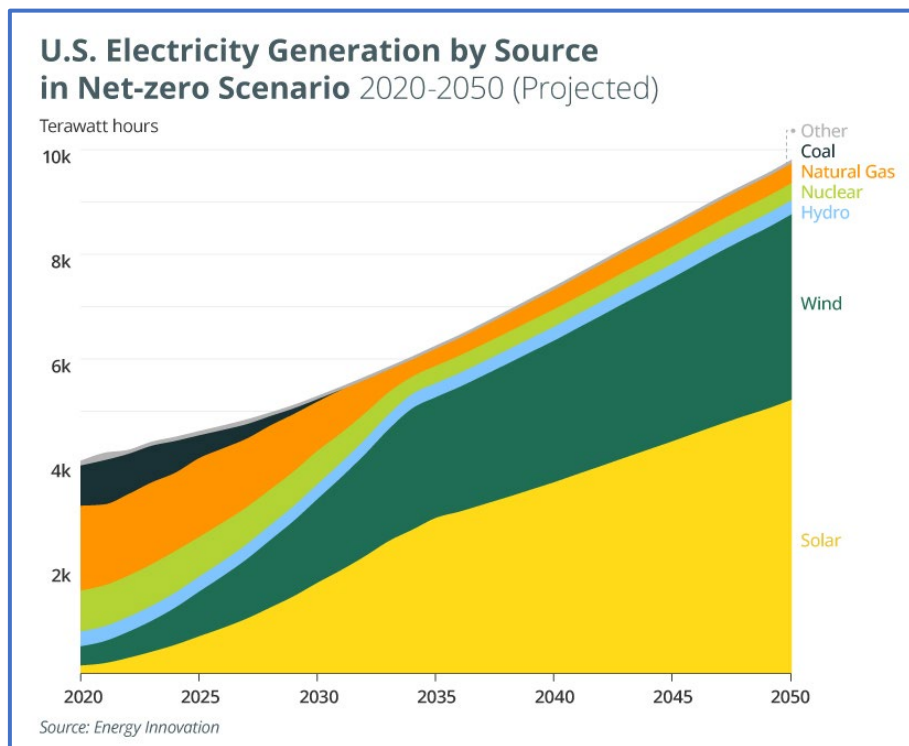
### Fossil Generation

These of course include coal, natural gas, and oil generation. Each is a unique distress opportunity, and in all cases Net Zero advocates want them to go away. As the chart below shows, **fossil generation is shrinking and will continue to shrink.**

Those who have a more balanced viewpoint understand that if they disappear too soon, the grid will become far less reliable. ***Even if there were ample renewables and batteries, it is hard to believe grid reliability will not be at risk.***

The key to distressed fossil generation is location, location, location. The grid was built on centralized generation, so some of those locations will be required for grid reliability. The FERC knows this as do the ISOs operating the grid. Movement is underway to provide economic incentives to maintain specific locations for fossil generation to remain operable.

Oil units are easily the oldest and least efficient. They are primarily used now for emergency backup.



**Figure 6: Net Zero Generation Mix Projections**

What they do have is transmission access and a site permit for generation, valuable assets all by themselves. **The strategy here is to acquire the unit, tear it down, and build batteries on the site.**

It wasn't long ago that gas-fired generation was all the rage. A few units are still being built, but in general, many markets overbuilt and economics for all suffered, unless it was in the right location. It is this author's opinion that some amount of **gas generation will be required well beyond 2050**. This was verified by a study Skipping Stone did in California where we proved that even if renewable and battery development goals were met, and even exceeded by 20%, California would not be able to maintain reliability without gas fired generation.

Valuations on gas-fired generation have been steadily falling for the past couple of years. Now would be a good time to acquire one or two at reasonable prices. **The key again, is picking the right location.**

Coal plants are obviously distressed, and it wouldn't be hard to find owners who will sell them. In most cases even at very distressed values it would be too risky to buy a coal plant. That said, some coal plants are located on or near the ocean and would make excellent transmission landing spots for offshore wind. Typically, these sites are fairly large and could hold several batteries. **Just think of the benefits of having five or six 40MW batteries at the site connected to offshore wind and onshore transmission.**

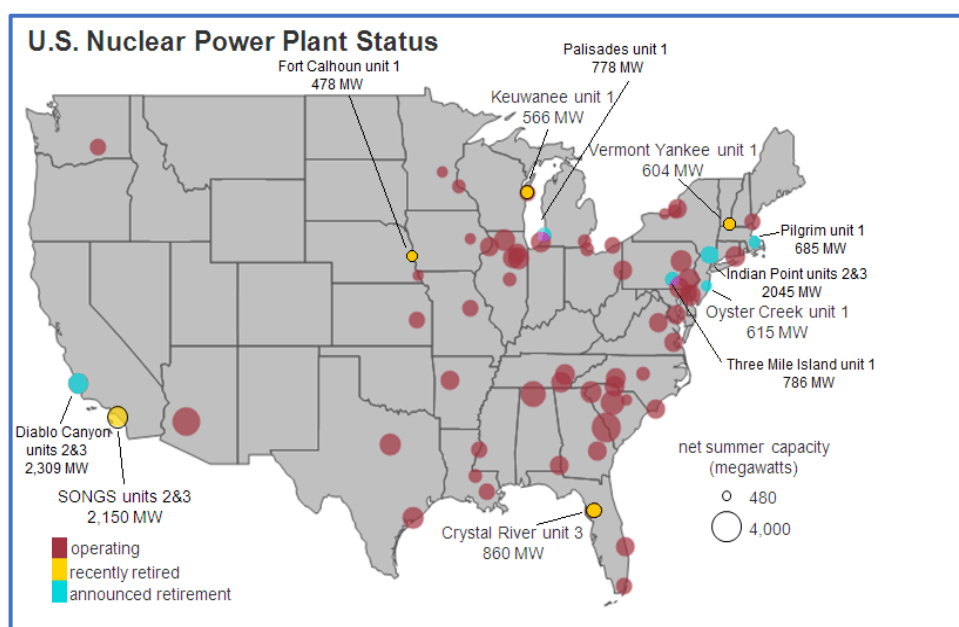
## Nuclear Power Plants (existing)

There are no planned additions of traditionally large nuclear plants in the US. As the chart shows there are several announced retirements as well as some recently retired plants.

The opportunity with existing nuclear is a bit of a gamble. **If you believe renewable power will not meet all the demand, and if you believe that clean nuclear solves a baseload generation need, then it makes sense that the regulators will extend the life of an existing nuclear plant (as they did in Japan).**

Currently several nuclear plants are available to acquire. For example, Vistra recently acquired four nuclear plants from Energy Harbor totaling 4,000 MWs.

Japanese companies have a lot of experience with nuclear and recently have gone through upgrade projects resulting in operating extensions.

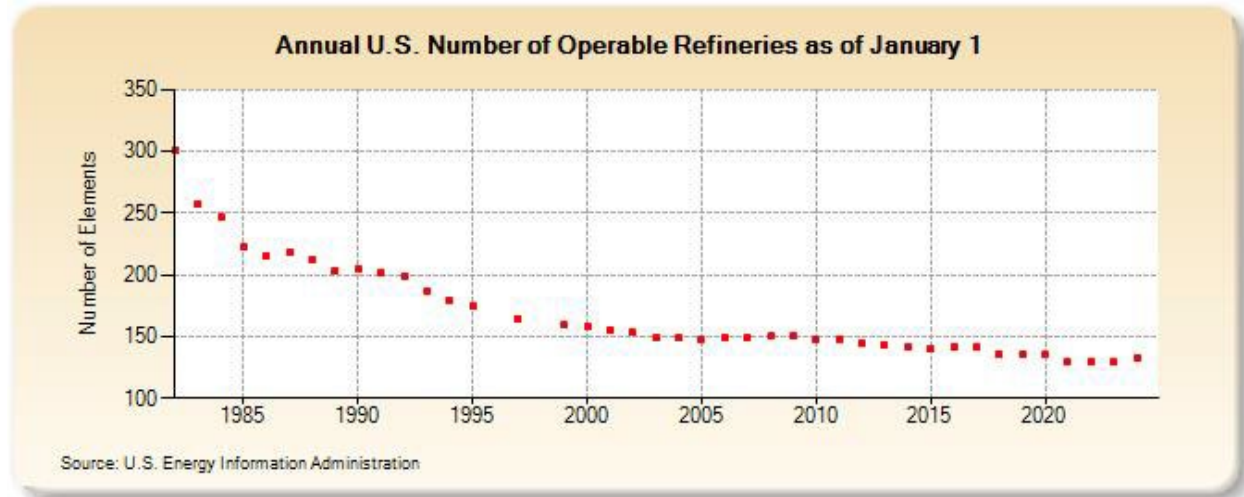


**Figure 7: Nuclear Power**

**These skills would be very valuable in the US nuclear market.**

## Refineries

Assuming every engine of every type is an EV, then refineries for gasoline, jet fuel, and diesel can all be closed. In the last three years alone six refineries have closed. The distress strategy isn't based on a growing liquid fuels market, but rather on waterfront locations, with pipeline connectivity inland and deep-water docks. ***This type of location would be a natural fit for hydrogen and possibly LNG exports.***



**Figure 8: US Refineries**

Maintaining some refining capacity while converting a section into export facilities could shave years off building hydrogen and LNG export facilities. Building a new deep-water terminal can take ten years just to get a permit.

## Skipping Stone Services

Skipping Stone has extensive experience assisting clients develop investment strategies and then helping clients execute those strategies. Our resume includes over 300 clients worldwide and over 50 merger, acquisition, or investment projects. Many of these engagements were with international companies seeking North American opportunities.

Our specialty is finding deals that are not actively selling or seeking investment. In addition, we often work alongside our client's internal international team, their investment banking partner (if they have one) and their outside legal and tax advisors. If needed, we can also recommend legal or tax advisors in the US that have experience in the various sectors discussed in this paper.

We understand international clients looking to enter the North American market have different needs than clients located within North America. To meet these unique needs, Skipping Stone has developed educational, market research, and other services that help international clients bridge the knowledge gap.

Many companies are already pursuing North American opportunities or currently have investments, experience, and a US presence. Our Services are designed to assist clients at any stage in the process, not just those starting to explore North American energy markets and opportunities.

## Types of Engagements

### Strategy Workshops

We perform a facilitated collaborative workshop with the client to explore and assess their internal attributes and to discuss potential opportunity segments, list investment criteria, and set goals, objectives, and a timeline.

### Market Education

We provide a deeper understanding of a specific segment, geographical differences, company types and business models, and operational as well as organizational designs.

### Relationship Development

We can offer introductions and facilitated meetings with company leaders from our large network of contacts.

### Case Studies

These are examples of similar transactions or strategies pursued either successfully or not, by companies similar to the client. They can also be benchmark case studies to compare one strategy outcome with another.

### Opportunity Identification & Targeting

- Skipping Stone researches the companies and/or projects involved in the sector and subsectors to which the client has narrowed their focus, and provides short profiles of each company and/or project opportunity. Next, we benchmark and score the profiles against a client-approved ranking method to narrow the list of potential targets that most closely fit client-specified criteria.
- If a client has received pitch packages from bankers, brokers, or project developers, we can review these and provide analysis of the opportunity and risks as well as a reality check of the assumptions provided and give general feedback.
- From the shorter list of potential opportunities, we reach out to executives or board members of the opportunity to answer a set of predefined questions as developed in collaboration with our client. Upon sharing those results with clients, we then schedule meetings with our client and the selected targets.
  - In many cases Skipping Stone has contacts with leadership either directly or through our North American leadership contact database of over 15,000 contacts.

### Opportunity Assessment

- If the opportunity already has a data room, we sort out with the client which areas they want us to review and provide an assessment. If they don't have a data room, we facilitate getting the target company to assemble information needed using a data request checklist. Usually at this step, we facilitate one or more in-person meetings between the client and the target company to discuss findings and expectations.
- Using a scorecard model that includes the client criteria, as well as financial assessment, we collaborate with the client to determine if the target meets the conditions required to begin negotiations toward a term sheet and eventual deal.

## Risk Assessment

No opportunity is perfect. We use a SWOT (Strengths, Weaknesses, Opportunities, Threats) methodology and provide a report to clients that includes the SWOT analysis as well as a listing of key risk factors and their potential impact on the opportunity.

## Term Sheet & Contract Negotiation Advisory

We work with client leadership, legal departments and outside attorneys to provide our experience in structuring deals. We also advise on the tactics and strategies associated with negotiating with North American companies.

### To Learn More About These Opportunities and Skipping Stone Services Please Contact:

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## About the Author

Peter Weigand, Skipping Stone CEO, has over thirty years in the global gas and electric markets. During that time, he has been CEO of several energy companies and provided transition strategy and M&A assistance as a consultant for dozens of energy clients globally.

Since entering the energy business, Peter has experienced the tsunamis of changes that have transformed the industry. In his early years Peter was heavily involved in the wave related to deregulation of the electricity and gas markets in the US. He has also worked with deregulation of energy markets in Europe and Australia. He has been engaged in liberalization of the Japan market for the past 10 years. The next wave was smart grid and all the changes it has brought and is bringing. The most current wave Peter is involved in is the transition to a Net Zero grid. These waves overlap and one wave can influence strategy on a different wave. Often knowledge of what didn't work is as important as what did work. Every wave brings a need for energy companies of all types to adapt or be left behind. Each is an opportunity to reinvent businesses from assets to business models. The industry has many case studies where giants who didn't adapt no longer exist and small companies grew big because they adapted early and followed a sound strategic roadmap.

The author's goal with this paper, besides sharing his strategic thoughts, is to expand his network of energy clients who want to grow and prosper.

Peter welcomes introductory meetings to discuss these and other ideas.

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