

Lifton's First Law of Energy Economics

written by Jack Lifton | August 7, 2026

The Cost That Matters Most

There is a tendency among economists and politicians to measure almost everything except the one thing upon which everything else depends. They measure inflation, employment, productivity, trade balances, deficits, interest rates, stock market performance, and gross domestic product. These are all important. But they are secondary. The primary cost in every economy is **energy**.

Over the years I have come to believe that this simple observation deserves to be elevated to the level of a first principle. I call it **Lifton's First Law of Energy Economics**:

The price of civilization is the continuous production of abundant, reliable, and affordable energy. Every other economic cost is derivative. Everything else follows from this law. Every product, every service, every mile traveled, every ton mined, every semiconductor manufactured, every data center operated, every hospital kept open, every farm harvested, and every military capability maintained is ultimately an expression of energy transformed into useful work.

Civilizations do not run on money. They run on energy. Money is simply the accounting system by which we measure the exchange of the products and services made possible by energy. The real cost of progress is therefore not measured in dollars alone. It is measured by the cost of producing the ever increasing quantities of dependable energy required to sustain modern civilization.

Civilization is an Energy Machine

Human history is, in many respects, nothing more than the history of increasing mankind's command over energy. The discovery of fire made metallurgy possible. Animal power expanded agriculture. Coal powered the Industrial Revolution. Oil transformed transportation. Natural gas revolutionized manufacturing. Electricity unified the modern industrial economy. Nuclear power demonstrated that extraordinary quantities of energy could be produced from extraordinarily small quantities of fuel.

Each advance increased the amount of useful work available to society. Each advance increased productivity. Each advance increased wealth. The common denominator was never politics. It was energy. Societies with abundant, reliable, and affordable energy prospered. Those without it stagnated.

Lifton's First Law merely recognizes what history has repeatedly demonstrated.

Climate Policy Changed the Discussion—but Not the Physics

The climate change movement fundamentally changed the political discussion about energy. Instead of asking how to produce ever more affordable energy, governments increasingly asked how to produce energy with fewer carbon emissions. Those are not the same question.

Reducing emissions may well be a desirable objective. Reasonable people can disagree about the best methods and timetable. But no society has ever repealed the laws of thermodynamics. Modern civilization requires continuously increasing quantities of

dependable energy. Economic growth requires more energy. Artificial intelligence requires more energy. Data centers require more energy. Electrification requires more energy. Critical mineral production requires more energy. Population growth requires more energy.

The question has never been whether civilization will require more energy. The question has always been whether governments understand the economic consequences of making that energy more expensive. Too often, they have assumed that changing the energy source somehow changes the amount of energy civilization requires. Physics does not permit that assumption.

Critical Minerals are Actually Energy Businesses

The critical minerals industry is generally described as a mining business. It is not. It is fundamentally an energy business. Mining moves enormous quantities of rock. Beneficiation consumes electricity. Grinding consumes electricity. Pumping consumes electricity. Hydrometallurgy consumes heat and chemicals. Pyrometallurgy consumes still more energy. Rare earth separation consumes electricity, reagents, steam, and heat. Metal making consumes energy. Alloy making consumes energy. Magnet manufacturing consumes energy. Every step that adds value also consumes energy.

When I evaluate a rare earth project, one of my first questions is not simply whether the deposit is large enough. It is whether the project has access to reliable, affordable energy over the decades required to become a long term supplier. Without that, the remaining economics become increasingly theoretical.

Why Economists Often Miss the Point

Traditional economic analysis divides costs into labor, capital, transportation, taxes, financing, regulation, depreciation, and overhead. Each category appears separate. In reality, almost every one is simply another expression of energy consumption. Transportation is energy. Construction is energy. Manufacturing is energy. Communications are energy. Agriculture is energy. Computing is energy. National defense is energy.

Even labor productivity increasingly reflects how effectively workers can employ machines powered by electricity or fuels. Energy is not merely another line item on an income statement. It is the foundation beneath nearly every other cost. Lifton's First Law of Energy suggests that economists have often begun their calculations too late in the chain of causation.

Industrial Policy Cannot Ignore Energy Economics

Governments today enthusiastically subsidize battery factories, semiconductor plants, electric vehicles, critical mineral processing, and magnet manufacturing. The announcements are impressive. The ribbon cuttings make excellent political theater. But surprisingly little attention is paid to the long term cost and reliability of the energy required to operate these facilities competitively. Subsidizing factories while ignoring energy economics is like building an airport without runways. The buildings may be beautiful. Nothing flies.

History demonstrates that industrial leadership belongs to those nations capable of producing goods with abundant, dependable, and competitively priced energy. No subsidy can permanently compensate for the structural cost of energy. Eventually

economics overwhelms politics. It always does.

The Twenty First Century Will Require More Energy—Not Less

Artificial intelligence alone is reshaping the energy equation. Massive data centers require uninterrupted electrical power. Semiconductor fabrication requires extraordinary reliability. Electrification shifts energy demand rather than eliminating it. Critical minerals require processing. Advanced manufacturing requires process heat. Automation increases electricity demand.

The digital economy is not replacing industrial civilization. It is making industrial civilization even more energy intensive. Ironically, the industries most frequently described as “green” are among the most energy intensive ever developed.

Conclusion

If governments wish to encourage long term prosperity, they should begin every major economic policy discussion with a single question: **Will this policy increase the long term supply of abundant, reliable, and affordable energy?** If the answer is yes, economic growth becomes easier. If the answer is no, every subsequent policy must struggle against an increasingly unfavorable economic reality.

That does not mean every energy source is equally attractive. Economics, environmental considerations, national security, and technology all matter. But they matter only after one accepts the central proposition embodied in Lifton’s First Law. Civilizations do not rise because they possess sophisticated financial systems. They rise because they command increasing quantities of useful energy at costs their economies can afford.

The greatest mistake of many contemporary governments—and of much contemporary economics—has been to treat energy as merely another sector of the economy. It is not. Energy is the economy.

Everything else is accounting.