TRUE PHOTONIC · A FORWARD LOOK

Light Buildings

Derek W. Bailey, Founder, True Photonic, Inc. · November 2026

The voters didn't ban computing. They banned a power grab and a huge thirst. This is a short look at what could be built instead.

What people are saying no to

Across the United States and Canada, towns and provinces are pushing back on giant data centers. They are tired of paying for them with their electric bills, their water, their land, and the noise. Voters rejected proposals at the ballot box. Provinces are raising power rates, capping growth, and telling developers to bring their own power plant. The message is the same everywhere: no more sheds on the edge of town that take the grid's power and the town's water.

Why today's computers need so much

In simple terms, we trade electricity for logic. Every one and zero in today's computers is made by a transistor, and a transistor only changes state when electric current is pushed through it. Billions of them switch billions of times a second, and nearly every watt that goes in comes back out as heat. Cooling that heat is what draws down the lake. Feeding those transistors is what needs the power plant. The power bill, the cooling bill, and the bill for replacing worn-out chips are three receipts for the same transaction.

What changes when the logic happens in light

Most of the light in computing today is the wire, moving data between chips, or the helper, speeding up one job for the transistor. The decisions are still made by transistors, so the heat stays. True Photonic is building Logic-in-Light, where the ones and zeros and the decisions made with them happen in light. You get more logic out of every watt, so the electric bill drops, the cooling bill drops, and the cost structure collapses behind it.

What a light building is

A light building puts that kind of computer to work inside a building a city already has. Each installation is designed for the building holding it, sized to the service that building already has. Instead of piling a whole load onto one spot on the grid, light buildings spread it across many buildings joined by fiber, so a city full of them can deliver the capacity of a giant data center without any one building asking the grid for more. Water use is like any office: bathrooms and coffee.

Nobody has to own a data center. Small businesses lease the compute. A group of experts can share a building, take their own floors, and have the equipment put in for them.

The numbers, as we model them

Our economic model compares a full build against a full build for two gigawatts of computing, with revenue held exactly equal on both sides. The conventional side is calibrated to Amazon Web Services' published FY2025 results.

TWO GIGAWATTS OF COMPUTING	RUN ON TRANSISTORS	RUN IN LIGHT
Power, per year	about $1.5 billion	**about $129 million**
Water and cooling, per year	about $300 million	**none**
Build cost	about $27 billion	**under $3 billion**
Operating margin	35%	**74%**

Modeled figures from the True Photonic Clean Compute economic model, 2026. They are projections, not measured results.

Why it matters for AI

Wall Street is asking whether AI can earn enough to pay for itself. The break-even everyone worries about is set by cost: the chips, the buildings, the power, and the money borrowed to buy them. Ben Franklin wrote that "a penny saved is two pence clear." A dollar of cost that never has to be spent is a full dollar of profit. AI becomes a sure bet when technology answers the cost side.

What comes next

Every town, state, and province is writing its plan for computing right now. We intend to be in those plans, with buildings that sit under every rule being written because they never needed the power plant, the lake, or the new transmission line in the first place. We intend to be a better neighbor, and we promise to spread the opportunity as wide as we can.

Follow along. Derek writes about light, computing, and who it should serve on Substack: **derekwbailey.substack.com**. Contact: dbailey@truephotonic.com

Derek W. Bailey is the Founder of True Photonic, Inc. and author of *Keep Computing: How Light Solves Computing's Impossible Problem* (2026). TPI is developing the Logic-in-Light™ architecture centered on the Poovey Switch, validated at 150–200 femtoseconds at the Technion Israel Institute of Technology.

Disclosure: The author has a financial interest in the success of photonic computing technology. Performance projections are based on preliminary research, early-stage testing, and technical simulations. Actual results may vary.

Forward-Looking Statements: This document contains forward-looking statements regarding future technological capabilities and market developments. These statements involve risks and uncertainties that may cause actual results to differ materially. Readers should not place undue reliance on forward-looking statements, which speak only as of the publication date.