

The Edmonston Giant

A Green New Deal is Harder Than You May Think

by [Adam Selene](#) (April 2019)



Hillside, Wayne Thiebaud, 1963

A giant lives under the Tehachapi Mountains of southern California. It performs a miracle for the people living in the cities and towns, including Los Angeles and San Diego, carrying 2 billion gallons of water a day over the mountains.

This giant is the Edmonston pumping plant which, according to [Wikipedia](#), “can fling nearly 2 million gallons per minute up over the Tehachapis.”

How much of a miracle is this?

The ancient Greek historian Herodotus tells us that 100,000 people laboured on the great pyramids of Egypt. Other estimates are 20,000 to 30,000 people. Some estimates are even less – a rotating work force of perhaps 2,000.

How many people carrying water would be needed to do the work of the Edmonston giant?

Each person, on a yoke across the shoulders, might take two 3 gallon buckets at a time. The 3-mile round trip with its 1,926 feet vertical rise—that’s 3,300 steps—might be accomplished in an hour. With an eight-hour working day, a bit of arithmetic leads to a startling answer.

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Forty-two million people are needed to do the work of the Edmonston giant!

But perhaps not the same people all the time. Like the pyramids, a rotating workforce could be the way to do it. A three-month stint for each and every one of the more than 160 million strong American workforce.

Instead of backbreaking work carrying water, perhaps we can do better with other methods. Some see in all the people pedalling their gym bikes a way to both get fit and reduce greenhouse emissions by generating electricity.

Pedal-A-Watt [says](#) that with its product an “average rider can produce up to 200 watts—ride for an hour and you’ll generate enough to power a 25 watt fluorescent light bulb for eight hours.”

How many riders do we need to power the Edmonston pumping plant? It uses up to 787 MW peak, but let’s assume a nominal load of 500 MW. To run those pumps would need about two-and-a-half million cyclists peddling for an hour. To go around the clock would need an hour of pedalling from each of 60 million people.

But consider this [quote](#) from a 65-year old man who has been cycling for decades:

I have a Windstream DC generator attached to an indoor bicycle trainer and I crank it while I'm watching a DVD to do my 'daily grind'. I can quite comfortably churn out 100-110 watts (at 12 volts) for about half an hour, and my heart rate sits comfortably at 110 bpm +/- . I can get up to about 130 watts but only for a couple of minutes before the heart rate gets up to 125-130 bpm. On my road bike I can max out at 137 bpm going up a moderate incline.

But wait, you say, we don't have to pedal either; there's renewable energy from the wind and the sun. Surely, these are the 21st century answer!

One of the largest wind farms in America is the Alta Wind Energy Center in the Tehachapi Pass, about 50 miles East of the Edmonston pumping plant.

The Alta Centre has a name-plate rating of 1,547 MW and with a capacity factor of 30 per cent its total annual output is about 2,680 GWh. This is not enough for the pumping plant—in 2017 it used 4,394 GWh.