



Roger Cravens
Sam's Club-Logistics
Wal-Mart Stores, Inc.
702 SW. 8th
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Date: February 14, 2009

Subject: Energy Neutral Wal-Mart via JPods Networks

Dear Roger,

JPods networks are a paradigm shift in transportation similar to that of Henry Ford's a century ago; on-demand mobility for people and cargo is using 15% of the energy required by oil-powered transportation. JPods networks provide service of a chauffeured car at the cost to operate an elevator; on-demand mobility regardless of age, ability or wealth.

By driving power requirements to less than 150 watt-hours per passenger mile it becomes practical to use the distributed nature of the transportation network to harvest naturally available power sources. Solar collectors 2 meters wide over the rail gather between 5,000 and 12,000 vehicle-miles of power per mile of rail per day. As the networks grow there will significant excess power.

A larger Wal-Mart store can be energy neutral by deploying 4.3 miles or 6.8 km of rail. This is based on 5 hours of noon-day sun per day using mid-efficiency (100 watt per square meter) collectors 2 meters wide mounted over the rails. If needed the power can be doubled increasing the width and efficiency of the collectors.

Networking a store's economic community can also save about 983 watt-hours for each passenger mile converted from cars (1,033 watt-hours) to JPods vehicles (150 watt-hours). It would not be surprising to see the serendipitous energy savings from cutting car trips to exceed the 2.5 billion watt-hour per year saved by the store. There are harmonics in self-reliance we have yet to discover.

Benefits

Applying a systems approach, JPods networks contributes to Wal-Mart's energy objectives by:

- Expanding the roof, providing a revenue generating means to add more energy capture area to a store.
- Reducing customer transport by cutting energy required for customers to get to the stores by 85%.
- Reducing Wal-Mart logistics transport energy costs for delivering goods to the stores substantially.
- Creating an atmosphere that while fun, provides energy conservation and self-reliance desired by customers, staffs and their community -- essentially turning an economic and self-reliance enhancing project into theme park level fun.

Timeline

Displacing oil-powered transportation must be iterated to full-scale deployment. The Personal Rapid Transit (PRT) industry still has a lot to learn as it optimizes operations. Although the American Society of Civil Engineers (ASCE) provides Automated People Mover Standards, Despite Morgantown's PRT network delivering 110 million oil-free, injury-free passenger miles government have been reluctant innovate. We can resolve that barrier by starting with parking lot sized networks and iterating from that success on the follow schedule:

- In 3 months, have operational "crew-only" systems operating in a parking lot. This is expected to generate world press coverage for four reasons:
 1. The speed with which we can deploy networks.
 2. The simplicity of our networks.
 3. Our ability to create jobs in a collapsing economy.
 4. Our ability to change the lifeblood of our economy from oil to ingenuity.
- In 3 months, Wal-Mart will be viewed as a leader in the solar-powered transportation economic boom that will happen over the next 12 years and that will provide a way to:
 1. Convert 85% of energy costs at the store level to profits.
 2. Create 2 million jobs.
 3. Cut family transportation costs in half.
- In 3 years, Wal-Mart stores will be energy neutral.
- In less than 5 years, initial efforts will have generated a 100% payback.
- In 6 years, working families that use the network will increase disposable income by \$2,000 per year as transportation costs are cut from \$10,300 to about \$8,000 per year.
- In 12 years, 70% of Wal-Mart customers will come and go using solar-powered transportation networks operating at 15% of the energy requirements of cars with zero harmful emissions.
- In 12 years, 80% of goods will be delivered to stores via solar-powered transportation networks.
- In 12 years, those working families that use the network will increase disposable income by \$5,000 per year as transportation costs are cut from \$10,300 to about \$5,000 per year.

Iterative Process

Re-tooling transportation in 12 years is an ambitious, but not impossible, task. Facing such a aggressive task, we need to take the ant approach to eating an elephant, small bites, and lots of friends. Start small and iterate often. We will rigorously restrict designs within the state of the art, yet aggressively iterate to advance the state of the art.

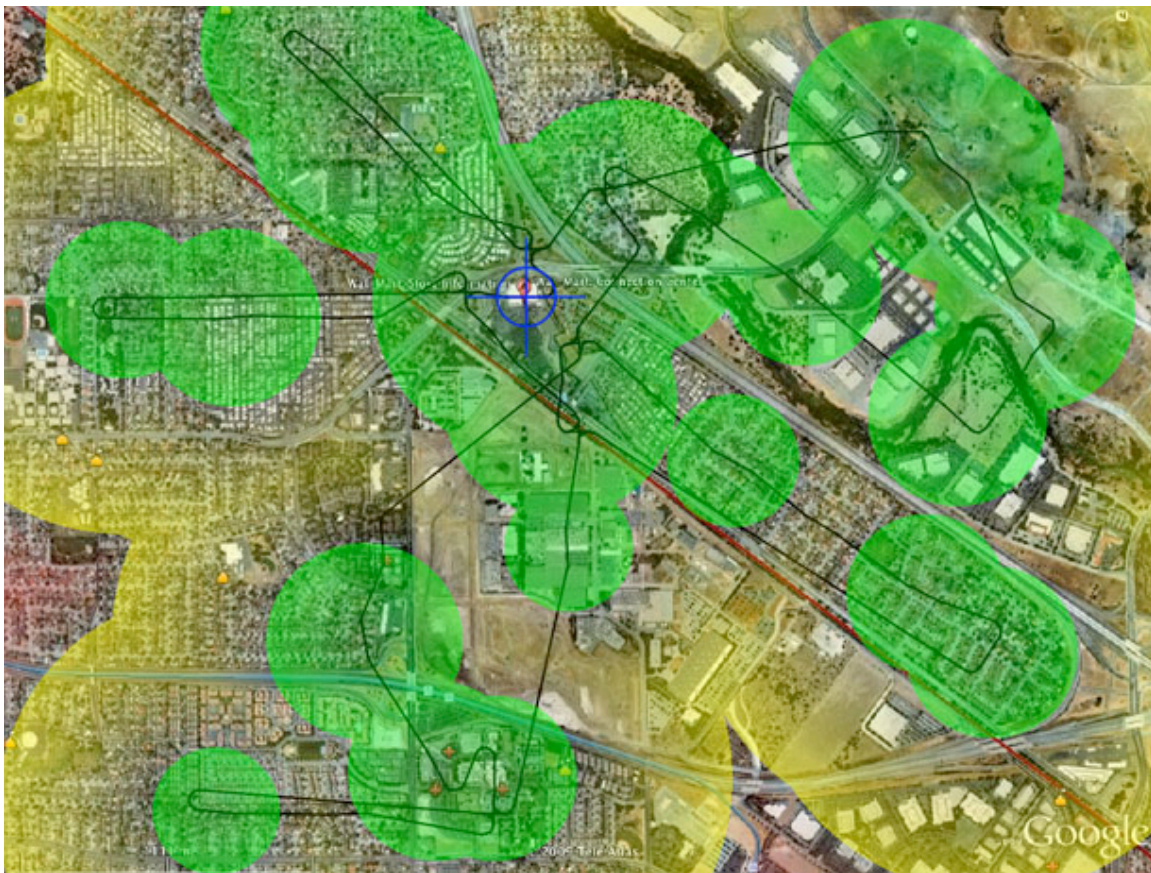
Example Networks

Following are two networks. From the blue cross-hair green circles are 10 minutes, yellow circles are 20 minutes and red are 30 minutes.

Routes are not intended to be precise. Exact routes must be defined with significant local input. The network modeling software allows easy testing of alternatives.

Wal-Mart Stores in San Jose, CA.

- Wal-Mart at 5502 Monterey Hwy, San Jose, CA
 1. A 400-meter system would connect the Caltrain station to the store.
 2. Expanding the network to light rail and hospital complexes a mile away will allow everyone using the rail systems to come to Wal-Mart riding on a solar powered transportation network that some will see as a theme park ride as well as a shopping trip.
 3. By add multiple 100-400 meter systems in parking lots in other Wal-Marts would increase the value of the remote areas of the parking lots and would make going to Wal-Mart an enjoyable and entertaining experience.
 4. Expand of the local network to 24 kilometer would provide enough rail to power the Wal-Mart store and the rail network.



- Story Road
 1. Start with a 200-meter system inside the parking lot.
 2. Expand to 22 km to connect neighborhoods, industrial employment areas and downtown San Jose and the light rail. It is also possible to connect to Diridon Station.



Energy Storage and Management

In the beginning, we recommend using the grid as a battery, making it possible to sell peak power to the grid and buy off-peak power from the grid at night. In cooperation with the hospital, it may be practical to use a molten sodium battery. Ultra-capacitors in the multiple-mega-watt-hour class will develop over the next few years to support our rails. Storage capacity, like data storage capacity will drop in price exponentially as we expand the demand. There will be innovations we cannot currently conceive created to meet our expanding demand. Bill Saylor, on our team, is a member of the IEEE P1547 standards committee for distributed resource grid interconnection standards. Advancements in technology will occur as the project develops, and we will take advantage of those advances by designing them into the ongoing projects.

As with the Internet or any network, the value goes up exponentially with the number of interconnected nodes -- while the cost drops. By cross-connecting with existing rails, we add to the network. By cross-connecting the locations where people live and those where they work and shop, the value further expands.

Funding and Payback

There are multiple ways to fund the network. Energy savings create a typical payback of 1-5 years.

Option: Marketing Self-Reliance

My personal hope is you will use JPods efforts in a PR campaign about self-reliance. Self-reliance is important as we work through the 6 difficult years it will take to work our way around

the debt collapse, Peak Oil costs and Global Warming mistakes. Wal-Mart could display self reliance while encouraging shoppers to do some of the same – like explaining how to plant Victory Gardens using Wal-Mart gardening supplies.

We can hold energy workshop and “how to build your own JPods” workshops at Wal-Marts. Like the car industry in the 1890’s, making JPods, CargoPods, TrashPods, etc... will become a cottage industry. Like the car and airplane industries in the early 1900’s we will encourage diverse building sites. Micro-manufacturing will help re-build America’s manufacturing base. Efforts will require materials. It might be helpful and profitable for Wal-Mart to stock and sell personal transport components once the projects are begun.

Additional Details

Please read our response the San Jose’s request to build networks. There is a link on the Home page of www.jpods.com. Attached is the JPods BHAG summary. Similar feats were accomplished with the Transcontinental Railroads, the Internet and Mulberry Harbors.

Innovation Background

Here is a reading list to help create a common frame of reference to understand how we can create a paradigm shift:

The Black Swan, uncertainty and making decisions without being the turkey.

Good to Great, transforming an organization from good to great.

Outliers, 10,000 hours required for expertise (we have spent the last decade preparing).

Nothing Like It in the World, how the Transcontinental Railroads were funded and built.

Innovate Like Edison, how Edison led innovation (a little contrived).

The Tipping Point, how change cascades from small manageable actions.

PB-244854, how to end the risk of oil embargoes by the Congressional Office of Technology Assessment, 1975. There are additional studies.

Your leadership is incredibly valuable as we demonstrate there is a profit in not wasting energy moving a ton to move a person. Your leadership will create a decade of stable markets for natural energy collection and innovative labor, reversing the current downward economic spiral.

Thanks for your leadership and kind consideration.

Sincerely



William James