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Is Maglev IN OUR FUTURE?



Many hurdles before maglev is able to get off the ground

Sunday, March 7, 1999

By Joe Grata, Post-Gazette Staff Writer

As long ago as November 1996, developers of maglev told public officials they were ready to start building.

David O'Loughlin, president of the nonprofit Western Pennsylvania Maglev Development Corp., said the high-tech transit system, supposed to put a 21st-century face on Pittsburgh, could be finished in about three years.



How the maglev shuttle might look. (Credit: General Atomics)

O'Loughlin was wrong.

And what happens — or doesn't happen — over the next six months or so will decide whether the futuristic, low-speed maglev ever advances to the next stage or whether it goes nowhere.

Maglev, which uses powerful electromagnets to "float" and power people-mover cars along an elevated guideway, is a two-part proposal.

One part is the Civic Arena Shuttle System, a \$147 million, 2,200-foot demonstration project tied into a 5,000-car parking garage behind the Civic Arena.

The other part, a follow-up to CASS, is the Pittsburgh Airborne Shuttle System, 10 miles and \$550 million of extensions to Oakland and the North Shore.

"We're at a crucial juncture" for both proposals, O'Loughlin now says of the deadlines and demands coming down on the nonprofit corporation he formed with two friends in 1992. "We shouldn't lose this opportunity. It's too important to Pittsburgh."

A Pittsburgh Post-Gazette review of the finances, technology and other

aspects of the maglev project found the track remains riddled with obstacles, including reluctance by the Port Authority to join WPMD as a public partner for PASS, and the lack of city support for CASS.

To try to overcome the city's doubts, WPMD sent a letter to Mayor Murphy Jan. 11, pledging that if maglev doesn't work, it would either replace the magnets with wheels or, "as a last resort ... demolish the guideway."

"So many positive things are at stake," O'Loughlin said in an interview, including new industry for the region, development, federal funds, jobs, state-of-art transit and parking solutions.

"Elevators allowed cities to grow upward in the 20th century," O'Loughlin said. "In the next century, cities will expand sideways, using horizontal elevators. Maglev technology will make that possible, and Pittsburgh can be at the forefront."

WPMD and 22 businesses that have affiliated with it, including the for-profit Crawford Parking Corp. that O'Loughlin formed with lawyer Paul Martha and accountant Robert Schwer, want to close the \$147 million financing package and begin work soon on the CASS demonstration project and parking garage. People who pay \$11 for all-day parking are to be able to ride the maglev shuttle for free to the Port Authority's Steel Plaza subway station, Downtown.

It would be the first low-speed maglev system in the world using the most advanced superconducting magnet technologies. Seventy-passenger cars would be levitated 2 inches above the guideway and moved along by linear induction motors.

But there are big issues that have not been resolved:

- Although the county commissioners voted to guarantee \$40 million in bonds for the CASS project, it's not a done deal. WPMD has to satisfy 58 conditions set by the county for the guarantee to take effect. Details cannot take forever, because the county commissioners will no longer be in office 10 months from now.

- Officials at General Atomics, the San Diego company that is providing the maglev technology for the system, have indicated they are growing impatient, although they have not set a deadline. They told the Pittsburgh Post-Gazette that until the entire \$147 million financial package is in place for the Civic Arena project, they will not start developing a prototype maglev track and car assembly that is to be built and tested at a site in Lawrence County.

Without the participation of General Atomics, WPMD does not have the technical expertise to build maglev.

- WPMD needs the \$147 million bond issue soon because that's where it's getting its \$1 million local match for a \$1 million federal grant to

conduct low-speed maglev feasibility tests, which represent the first phases of the maglev technology to be used in Pittsburgh.

■ WPMD's \$1 million federal grant application has been languishing since October. The Federal Transit Administration, Port Authority and Pennsylvania Department of Transportation have raised seven main issues, including no evidence of the \$1 million matching fund commitment, a need for written clarification about WPMD lobbying activities and compensation to be paid to WPMD's three officers, and questions about the financial organization and stability of a corporation "with no resources of its own." No deadline for resolving the issues has been established yet.

■ O'Loughlin said WPMD arrangements for the bond issue were "about 90 percent complete" and that the financing could be wrapped up if Mayor Murphy and the city approved tax deferrals that would be Pittsburgh's contribution toward guaranteeing the bonds, action that nobody in the city seems to be in a hurry about.

In a December 1996 letter, Murphy spelled out eight conditions for WPMD to meet for him to defer \$2 million a year in parking taxes. Murphy said his position "reflects a strong commitment" to the project by the city. City spokesman Craig Kwiecinski said Murphy stood by the conditions today, although Murphy was recently quoted in the Post-Gazette as being skeptical of WPMD ever succeeding.

■ WPMD still needs a fistful of approvals to build the pilot project: the Urban Redevelopment Authority, Public Auditorium Authority, city Planning Commission, city Art Commission, Port Authority (for the maglev stop at Steel Plaza T Station), county Industrial Development Authority, City Council and PennDOT (for approval to build the guideway over Interstate 579).

Tom Armstrong, chairman of the city Planning Commission, has said he has serious concerns about the visual and traffic impacts of the parking garage.

■ WPMD has yet to prepare the final drawings or bid package for a 1,600-space, first phase of the parking garage. On Jan. 8, O'Loughlin said on "Sunday Edition," a public affairs TV show produced by the Post-Gazette and KDKA-TV, that work would probably begin in June. "That was our target. But who knows how long it will take?" to get to groundbreaking, O'Loughlin says now.

Getting CASS started is critical to moving ahead with PASS, the extensions proposed to the North Shore and Oakland. That undertaking requires WPMD to secure a public partner in order to be eligible for federal funding.

The March 15 deadline to apply for the \$35 million in federal funds for PASS planning is almost here, and WPMD is still trying to woo the Port

Authority into a marriage.

While the Port Authority is considering WPMD's overtures, officials give the impression they might be reluctant partners.

Port Authority General Manager Paul Skoutelas said WPMD needed to address many issues, including possible conflicts for funds and riders between maglev, and buses and trolleys.

Such a public-private partnership also would keep WPMD eligible for future two-thirds federal funding for PASS construction, although PASS will be dead if CASS fails.

The Port Authority is not directly involved in the first phase, the Civic Arena shuttle, but some authority board members are skeptical about that project and maglev in general.

Board Chairman Neal Holmes said Port Authority's priority was to "get light rail, a proven technology, to the North Shore," not low-speed maglev.

Board member Jack Brooks, executive secretary-treasurer of the Western Pennsylvania Regional District Council of Carpenters, said he believed that WPMD "needs our partnership to give them credibility they don't have."

And board member Estella Smith, public affairs manager for Duquesne Light Co., said she disliked WPMD's plan for the parking garage because it will cause congestion, impact the new Crawford Square housing development where she lives and impair Hill District sight lines to Downtown.

WPMD needs to fill at least 3,500 of its spaces daily in order pay off the \$147 million bonded debt for the CASS project and generate money for operation and maintenance.

Despite the questions and skepticism, WPMD has built an alliance of supporters who include some powerful Pittsburgh business and political names, including all three Allegheny County commissioners, Pennsylvania's two U.S. senators and U.S. Rep. Bud Shuster, R-Bedford, chairman of the House Transportation Committee, which hands out federal transit money.

Even if things went exactly as O'Loughlin plans, it would be 42 months — late 2002 — before the Civic Arena maglev shuttle would go into operation. Skoutelas and other transit officials have said the 42-month development schedule was overly optimistic. They also question whether WPMD, comprising two attorneys and an accountant, has the technical expertise necessary to oversee such a project as complex as low-speed maglev.

O'Loughlin, former county development director, said all of the matters

raised had been or were in the process of being addressed. The adversity, obstacles and opposition neither surprise nor discourage him.

"As for the city, we're not asking them to take any financial risk for a project that can benefit Pittsburgh immensely," he said.

"For the county's part, this is going to be a great investment, with very low risk.

"We can work with the Port Authority if it's an Oakland route they're interested in. The important thing right now is not to miss out on the federal funds. If they don't come here, they'll go elsewhere."



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Is Maglev IN OUR FUTURE?



How does it work? How long is it? These and other key Q's and A's

Sunday, March 7, 1999

By Joe Grata, Post-Gazette Staff Writer

Q. How does low-speed maglev technology work?

A. Maglev technology employs powerful superconducting magnets to levitate or "float" cars about 2 inches above a guideway. Liquid helium in a special encasement cools the magnets to near absolute zero (or about -400 degrees Fahrenheit), enabling relatively small magnets to create very powerful fields.

Linear induction motors using magnetic fields propel the cars. Such motors are already adapted to transit, such as in Vancouver's automated SkyTrain Light Rail system.

Electrodynamics involving the interaction of electrical currents and magnetic forces, state-of-art computers and microprocessors maintain guidance (vertical and horizontal spacing) during travel. Low-speed maglev travels up to 60 mph. In Pittsburgh's case, top speed will be about 40 mph.

Q. Why do the superconducting magnets have to be super-cooled?

A. It's a matter of complex physics. But by bathing superconducting magnetic coils in liquid helium, a refrigerant, scientists can create large magnetic fields that produce no electrical resistance – they don't lose power and they use very little energy. "It happens almost like magic," one scientist said.

Q. Where can I find other low-speed maglev systems?

A. Nowhere. One built in the mid-1980s in Birmingham, England, operated until about three years ago. It used a since-abandoned technology and consisted of a single-car, 2,000-foot shuttle between a parking lot and an airport terminal.

Once hailed as a step into the future, the Birmingham maglev was replaced by shuttle buses. Supporters claim the system was never

properly maintained or updated with technology that has since improved.

Q. How long is the proposed Pittsburgh low-speed maglev system?

A. There are three phases, each one linked with 5,000 spaces of parking intended to generate money that the builder, Western Pennsylvania Maglev Development Corp., said is necessary to offer free rides, pay for electricity and provide adequate maintenance.

WPMD wants to get the first phase under way soon to showcase the technology and set the stage for two extensions. The first project is called Civic Arena Shuttle System.

CASS would consist of an elevated, 2,200-foot dual guideway, 30 feet above the ground, connecting a parking garage behind the Civic Arena to the Sixth Avenue-Ross Street entrance of the Steel Plaza subway station Downtown. The cost of CASS is estimated to be \$147 million, all of which WPMD is trying to raise privately, although public bond guarantees would be required.

Two proposed extensions from CASS, requiring at least 50 percent government financing, are referred to as Pittsburgh Airborne Shuttle System. One extension would run to the North Shore and the Gateway Center T Station. The other would run to the Pittsburgh Technology Center and Oakland. There would be 16 stops on a fully built, 10-mile system at places such as Carnegie Mellon University, University of Pittsburgh, Duquesne University, a new convention center, North Shore stadiums and Carnegie Science Center.

Total cost of all three phases, including the parking garages, has been estimated at \$700 million.

Q. Does low-speed maglev have advantages over light rail or a rubber-tire "people mover" system?

A. Supporters cite lower capital costs, lower operating costs, tight turning capabilities, virtually no noise pollution, smooth rides because levitated vehicles create no friction, less intrusion on land and an opportunity to showcase the city and establish it as world leader of transit technology.

Critics of the Pittsburgh project are questioning the use of public money, the philosophy of building the largest parking garage in Pittsburgh near Downtown rather than on the outskirts, competing with the Port Authority for funds and riders and whether any short transit system to the Civic Arena serves a worthwhile purpose.

Q. How does CASS compare with the people mover at Pittsburgh International Airport?

A. They're both shuttle systems that offer rides of similar time, distance and comfort in cars that virtually look alike.

The technology is not only different, but the Civic Arena maglev would operate outdoors instead of underground; on a 7 percent grade instead of on level; and encompass a 250-foot turn instead of a straight guideway like the people mover.

Q. What happens if I'm aboard the Civic Arena maglev shuttle and it breaks down?

A. If there's a real emergency, riders could open car doors manually to reach a combination emergency/maintenance walkway between the parallel maglev "tracks."

The maglev plan proposes using a customized tow vehicle in case a car dies because of lost power or a mechanical problem. It could go out on the track to push or tow a crippled car. Meanwhile, maglev would maintain service on the opposite track.

Maglev cars are to contain recessed emergency wheels, so if the cars lose their levitation, they can still ride on the guideway. Plans for the Civic Arena showcase project call for building a third maglev car to use as a spare.

Q. Will ice and snow cause operating problems?

A. Not likely. Ice and snow don't affect superconducting magnets or linear induction motors. The guideway will be designed with angles so most snow falls off or through holes that also allow natural light to penetrate below. If there's an accumulation of snow, the tow vehicle mentioned above can be equipped with a snow plow and a rotating broom to clear the path.

Q. How does maglev collect its power?

A. Just as a light rail vehicle uses a Z-shaped pantograph to collect electricity from overhead wires and transfer it to the car, maglev will use an armlike device to collect power from a small "power rail" incorporated into guideway construction. Lower voltage power used for car doors, lights, heating, ventilating and air conditioning is created through the use of transformers.

Q. Much has been said about how many jobs will be created. What's the outlook?

A. Western Pennsylvania Maglev Development literature states a new maglev industry would create up to 4,000 jobs, a figure that people interviewed for this article thought to be too high.

They said the employment outlook, not counting temporary construction jobs, would more likely be in the hundreds, depending on whether maglev were sold elsewhere and on how many Pittsburgh businesses would be involved.

For example, General Atomics officials said it would need only 16 people total "from the first day for testing, programming and building" the system, including the superconducting magnets. "I don't know where [WPMD] came up with those figures" about 4,000 jobs, GA project manager Eddie Leung said.

Q. What impact will the low-speed maglev guideway have on the city landscape?

A. Since low-speed maglev cars are one-sixth the weight of high-speed maglev and since magnetic coils don't have to be imbedded in the guideway, the much lighter elevated dual guideway can be built on T-shaped concrete columns 3 feet in diameter.

Columns would be up to 120 feet apart on a straight-away. They could be built within the area of a single parking space if the elevated system were to be built on a busy street such as Fifth Avenue. That is partly why supporters say maglev would be a perfect fit in Oakland.

Q. Where would WPMD get 5,000 cars to park in a seven-story garage next to the Civic Arena?

A. WPMD points to a consultant's parking and marketing study that shows at least 20,000 people will soon be working a short distance away on Grant Street, at places such as Mellon Bank and the USX Tower, whose 575 parking spaces are usually filled despite a \$17 charge after two hours. Also, parkers using the Civic Arena surface lots, which could be used for development, could be attracted to the new facility. The present 15-minute walk Downtown could become a 72-second maglev ride.

WPMD said the parking garage would generate enough revenue to meet bond payments and expenses with 3,500 to 4,000 all-day parkers.

WPMD also is looking to "double load" the garage, meaning in addition to daytime commuters, the garage would be used nights and weekends for Civic Arena events (137 events last year).

Will drivers who now pay \$4.50 for all-day parking at the arena pay the \$11 all-day rate that WPMD plans to charge? A consultant, Wilbur Smith Associates, believes so. An "event rate," now \$8, has not been established.


Q. How would the extra cars affect traffic around the Civic Area.

A. WPMD points out that there will be a total of 14 entry-exit lanes, some fitted with high-tech EZ-Pass-type equipment to automatically deduct parking fees from pre-paid accounts.

WPMD also claims that there's sufficient capacity for more cars on streets above Grant Street. Motorists who use Forbes, Fifth, Centre and

Bedford avenues and Bigelow Boulevard have expressed different opinions. Pennsylvania Department of Transportation officials say they have concerns about traffic problems. The city has not officially studied the situation.



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What maglev supporters are saying

Dr. Robert Capretto, a Port Authority board member, after visiting General Atomics, the San Diego-based company that is supplying the maglev technology — "If the proper expertise is hired to coordinate the technology, I'm comfortable with [maglev]. We blew Skybus [an elevated, rubber-tire people mover considered in the 1970s], and I don't want us to be the ones who blew this opportunity."

State Rep. Don Walko, D-North Side — "If you just look at the Civic Arena shuttle, then I'd wonder about the merit of the project. But when you extend the system to the North Shore and Oakland, it has wonderful possibilities. Given that maglev is going to be built somewhere, a lot of us would like to have it here."

Robert M. White, a Carnegie Mellon University professor of engineering — "Pittsburgh still has a 'low-tech' image. A high-profile initiative such as this would be a big step toward convincing prospective investors and entrepreneurs that Pittsburgh has the vision and courage to embrace new technology. If we walk away from maglev, we also lose \$500 million in federal funding to some other city."

What maglev critics are saying


Leonard Finnell of Forest Hills, retired Westinghouse Electric engineer — "The county commissioners have been maneuvered into the position that if they oppose maglev, they oppose progress and new jobs in the area. The only advantage of building an extremely expensive system for the short distance between the Civic Arena and Steel Plaza is to provide financial benefits to the promoters."

Jerry Selvaggi, independent engineer from Shadyside — "Maglev is a comprehensive system. There are none in operation in the U.S. It should be approached as an experimental undertaking. General Atomics should submit a full proposal for review by qualified engineers and scientists."

Michael E. Lamb, deputy prothonotary for Allegheny County — "Proponents point to a demand for Downtown parking as the force that will drive this project financially. Are we to believe there are 5,000 people willing to pay \$11 a day to park at the arena who do not park Downtown today. Even if these people did exist, would it be a good idea

to bring 5,000 more cars Downtown every day?"



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Is **Maglev** IN OUR FUTURE?



Maglev vs. the airport's people mover


Below is a comparison of the rubber-tire people mover at Pittsburgh International Airport and the proposed magnetically levitated shuttle from the Civic Arena to Sixth Avenue-Ross Street entrance of the Steel Plaza T Station. The two systems use different technology, but there are similarities in distance and speed.

**Uptown Maglev
(elevated)**

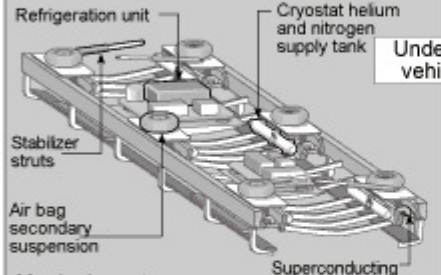


Guideway

**Airport People Mover
(underground)**



Guideway



Refrigeration unit

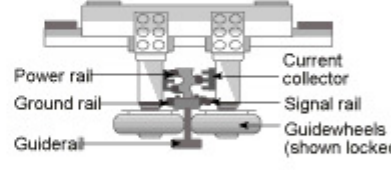
Cryostat helium and nitrogen supply tank

Under the vehicles

Stabilizer struts

Air bag secondary suspension

Superconducting coils



Power rail

Ground rail

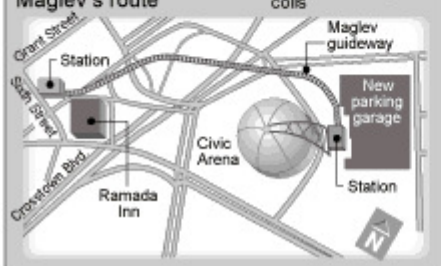
Guideway

Current collector

Signal rail

Guidewheels (shown locked)

Maglev's route



Grant Street

Station

Steel Plaza

Cross-town Blvd

Ramada Inn

Civic Arena

Maglev guideway

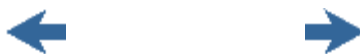
New parking garage


Station

How the two technologies compare

Maglev Shuttle	Category	People Mover
2,200 feet	Length	2,500 feet
two	Number of stations	two
72 seconds	Time of one-way ride	65 seconds
40 mph	Top speed	34 mph
One	Number of cars	Two per train
70 people	Capacity	160 per train
Est. \$50 million	Cost	\$14 million

Source: General Atomics and Allegheny County Aviation Department
 Credit: Steve Thomas/Post-Gazette



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Is Maglev IN OUR FUTURE?



California firm seeks to turn maglev plan into reality

Monday, March 8, 1999

By Joe Grata, Post-Gazette Staff Writer

SAN DIEGO — How's this for futuristic? A maglev system powerful enough to reach 15,000 mph in less than a minute catapults a one-ton supply ship up the side of a mountain and into orbit without using rockets.

Such a system, to deliver food and supplies to a space station, is the subject of a government research project being conducted by General Atomics, the same high-technology company enlisted to provide expertise for a proposed low-speed maglev transit system in Pittsburgh.



General Atomics scientists envision an advanced form of maglev technology powerful enough to reach 15,000 mph in seconds to catapult a one-ton payload up the side of a mountain and into orbit. (Credit: General Atomics)

If you have ever undergone magnetic resonance imaging, you may have experienced some of General Atomics' work. It builds superconducting magnets for MRIs manufactured in conjunction with Toshiba Corp.

Add more electricity and a very high-powered cooling system (to achieve about 400 degrees below zero Fahrenheit), and superconducting magnets on an MRI aren't much different from those General Atomics proposes to use on low-speed maglev cars.

"All of us came away believing General Atomics has the technological capability of building superconducting magnets," Port Authority General Manager Paul Skoutelas said after he and three other authority officials visited the company's San Diego headquarters last month.

The Western Pennsylvania Maglev Development Corp. wants the Port Authority to become its public partner on the second stage of maglev, proposed for Oakland and the North Shore. Securing a public partner is a

necessary step for obtaining partial federal construction funding.

"But a lot of technical know-how doesn't necessarily translate into the fact that they can guarantee a successful low-speed maglev system," Skoutelas continued. "There's a long gestation period between building a prototype and building a dependable, workable system ... and a lot of risk."

The main General Atomics facilities in suburban San Diego contain over 1 million square feet of engineering and test facilities, precision manufacturing installations and advanced technology labs. About 1,500 are employed here, including professors, scientists and technicians.

The headquarters complex is laid out geometrically, with buildings fanning out from a central building. It resembles a college campus but without a scrap of litter and with high security because of the government work it does. There are tennis courts, an outdoor pool, an employee cafeteria and a basketball court, but a soccer field recently gave way to building expansion.

Founded in 1955, the firm deals worldwide in design, research and manufacturing ranging from nuclear fusion to pilot-less surveillance and reconnaissance planes that fly over Bosnia.

It wasn't until six months ago, however, that General Atomics added low-speed maglev technology to a corporate portfolio that already included high-speed maglev systems for military purposes, including a "rocket" sled test track at Holloman Air Force Base in New Mexico. One use for such technology would be the space station resupply idea.

Before landing at General Atomics, low-speed maglev transit bounced from one high-tech firm to another as a result of acquisitions and mergers. General Dynamics, Martin Marietta and Lockheed Martin, which has retained a financial interest in the technology, have all had a piece of it over the years.

One key person also has bounced from company to company with the research: Eddie Leung, 45, senior program manager-superconducting systems of General Atomics.

Leung, a pioneer in maglev technology in the United States, was a member of the U.S. Senate task force for a national maglev initiative in the late 1980s.

He is one of two U.S. representatives to the International Maglev Conference. And more than anyone else, he's the person who gives the Pittsburgh project credibility — and a chance.

"Eddie (Leung) is extremely knowledgeable, talented and dedicated," Skoutelas said, indicating if maglev technology is to work in Pittsburgh, it will be largely because of Leung.

"I've put a whole lot of my life and energy into that project," Leung said. "This is a dream, and it's important for scientists and engineers to make dreams come true. It isn't just about making money."

Leung said the four companies where he has worked on low-speed maglev have invested \$1.2 million on research and development, engineering and testing. Only once has any received government money: \$50,000 out of a state grant given to Western Pennsylvania Maglev Development Corp.

General Atomics allowed Leung to bring a dozen of his key people when the firm bought Lockheed Martin's technology in superconductivity in September 1998.

For the proposed Pittsburgh project, Leung and several of his colleagues built a model to verify their concept of maglev technology designed to levitate or "float" 17-ton cars two inches above an elevated guideway. The 400-pound test vehicle was about the size of a wheelbarrow, without the wheels. It had already been disassembled by the time of the Port Authority and PG visits, but Leung said results were positive.

For the most part, low-speed maglev is a project that exists in computer models, a videotape of the small test vehicle and files of research results.

Leung believes the company is now ready to move to the next step — building a full-scale prototype that would raise, propel and stop a vehicle that would approach the size and weight of an actual passenger car. Magnets underneath the cars would be electrified through an arm descending to a power line on the guideway.

If WPMD lines up \$147 million to build a 5,000 space parking garage next to the Civic Arena and the maglev guideway and cars, General Atomics plans to build a \$2 million prototype on vacant industrial property in Ellwood City, Lawrence County, where it would run tests.

"I want a place where we can work in private," not a site (that has been proposed) in Panther Hollow in Oakland, "where everybody would be looking over our shoulder all the time," Leung said. "If everything isn't correct, people will never see it," and the shuttle cars would be equipped with rubber tires and resemble the people mover at Pittsburgh International Airport.

General Atomics would be paid about \$19 million to supply the superconducting magnets for vehicle levitation, linear induction motors for propulsion and the electrodynamic systems needed for the guidance and vehicle stability.

"The company is not going to make any money on this," Leung said. "General Atomics is betting it will work, and that profits will come in the future. We feel there is a big market out there. If this succeeds, we'll benefit, and Pittsburgh will benefit."

Leung said he met WPMD President David O'Loughlin almost five years ago, when O'Loughlin contacted General Dynamics about the maglev shuttle. "We hooked up, both believing there's a niche in the market for low-speed maglev. It requires a lower investment than light rail, and it has the potential to solve urban problems better."

Meanwhile, General Atomics is part of the American Magline Group with Hirschfeld Steel Co., Booz-Allen & Hamilton Inc. and Transrapid International. The consortium is proposing to build a 300-mph maglev system connecting Las Vegas and Southern California. West Mifflin-based Adtranz is part of the Transrapid's joint venture.

Although there is some difference of opinion on whether low-speed and high-speed maglev are competing for the same federal research and construction dollars, engineers say the systems are designed for two different uses. Low-speed is for short distances with frequent stops. High-speed is for long-distance between major population areas.



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Is Maglev IN OUR FUTURE?



Maglev's \$147 million budget

The first maglev project would involve construction of a 5,000-space parking garage next to the Civic Arena, a 2,200-foot elevated guideway and two stations, and development of three maglev cars, one of them a spare.

Project funds are to be raised through four separate bond sales, including \$40 million that the Allegheny County commissioners have voted to guarantee, and \$40 million the International Brotherhood of Electrical Workers has pledged to buy.

This is the latest version of the budget Western Pennsylvania Maglev Development Corp. has submitted to show how the funds are to be used.

Garage and stations

	Amount
P.J. Dick (garage construction)	\$48,100,000
Tasso Katselas (architect)	2,500,000
P.J. Dick (station construction)	3,000,000
Crawford Parking (project management)	*

Maglev shuttle system

P.J. Dick (guideway construction)	\$16,820,000
Hall Industries (vehicles)	10,234,000
General Atomics/Lockheed (magnets and testing)	18,458,000
Union Switch & Signal (signals, communications)	2,500,000
Mackin Engineering (engineering)	1,500,000
P.J. Dick/General Atomics (system integration)	4,100,000
Allowance for guideway plates	950,000
Allowance for spare parts	1,100,000
Vehicle maintenance equipment	300,000
Bonds, taxes and insurance for P.J. Dick	460,000
General Atomics/Lockheed tax allowance	320,000
Crawford Parking (project management)	2,500,000

Other construction/system expenses

SMG Corp. (land acquisition, right of way costs)	3,800,000
Independent engineer (assurance for bond holders)	200,000
Legal and other fees	3,600,000

Construction contingency (to pay for changes)	5,000,000
Retrofit to wheels (in case levitation doesn't work)	1,000,000


Reserve funds, miscellaneous

Interest earned on funds	(\$12,239,350)
Senior debt reserve fund (for bond issues)	4,672,944
Senior capitalized interest fund (for bonds)	12,469,653
Subordinate debt reserve fund (for bonds)	3,727,468
Subordinate capitalized interest fund (for bonds)	9,218,446
Expenses related to issuing bonds	1,980,000
Contingency fund for bond issues	1,168,839

Total expenses, fund uses **\$147,440,000**

(*Earlier version of budget showed \$2.5 million for Crawford Parking Corp. for project management of parking garage and stations. No amount is listed in current version.)



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Is Maglev IN OUR FUTURE?



Oakland is 'the place,' in eyes of planners

Monday, March 8, 1999

By Joe Grata, Post-Gazette Staff Writer

Pittsburgh's Oakland neighborhood is a mix of city housing, institutions and retail businesses with limited space, too much traffic and too little parking.

Oakland also is where people from the president of City Council to the general manager of the Port Authority say low-speed maglev transit makes the most sense.

Even John Rawls, vice president of electromagnetic systems for San Diego-based General Atomics, which is to build the high-tech components for maglev if it becomes a reality, prefers Oakland over a Civic Arena-to-Downtown shuttle.

Here's what Rawls said in a recent interview:

"An Oakland route would serve an urban area where a real transit need exists but is difficult to meet without a unique system like maglev. ... Oakland is the place we would like to showcase our technology to the rest of the world."

Western Pennsylvania Maglev Development Corp., Pittsburgh promoter and developer of the low-speed maglev here, said Oakland was its first choice, too, and the route it initially studied with funding from the Mellon Foundation.

But WPMD said Mayor Murphy resisted the proposal because it involved a parking garage and elevated guideway next to Second Avenue and former LTV industrial property he was preserving for a coke works and other development.

As a result of Murphy's stance and WPMD's opportunity to raise more money from a 5,000-space parking garage behind the Civic Arena, WPMD officials focused on the Downtown maglev first.

Murphy's press secretary, Craig Kwiecinski, said Murphy had no

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comment.

WPMD President David O'Loughlin said it's too late to back down on the Civic Arena maglev shuttle system and that maglev would still be extended to Oakland as part of the next stage of the \$700 million, 10-mile Pittsburgh project.

The Oakland extension would cost about \$300 million. WPMD said two-thirds would come from the federal government.

The line would run from the Civic Arena, past Mercy Hospital and Duquesne University, and follow Second Avenue to Oakland and Fifth Avenue, stopping at Magee-Womens Hospital, University of Pittsburgh, Carnegie museums and Carnegie Mellon University.

Maglev would loop through Panther Hollow to Second Avenue, where a 5,000-car parking garage on a former LTV site would intercept traffic from the Parkway East, Mon-Fayette Expressway, Second Avenue and Greenfield Avenue.

"If that [Civic Arena shuttle] is a test system, OK," City Council President Bob O'Connor said. "The real benefit would be in Oakland. The Port Authority has no plans, and we're still driving the same roads we took to Forbes Field and Oakland 50 years ago."

Port Authority General Manager Paul Skoutelas said if the authority encouraged maglev anywhere, it would be in Oakland.

"Oakland is a possibility as long as maglev does not interfere with our current plans and needs," Skoutelas said.

WPMD has asked the Port Authority to be its partner in a public-private venture to develop maglev beyond the Civic Area pilot project, reaching to Oakland and the North Shore.



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Is Maglev IN OUR FUTURE?



Maglev: The profit motive

Tuesday, March 9, 1999

By Joe Grata, Post-Gazette Staff Writer

Three Pittsburgh professionals want to fill the city's transit needs and enhance the region's status as a high-tech center by building maglev people movers.

They also want to make money.

At about the same time David O'Loughlin, Paul Martha and Robert Schwer formed the non-profit Western Pennsylvania Maglev Development Corp. in late 1992, they also formed Crawford Parking Corp., a for-profit company that could earn millions of dollars. They also are using an influential lobbying firm in Washington, D.C., to try to keep federal dollars flowing to their endeavor.

"Yes, it's an opportunity for us and other Pittsburgh businesses to make some money. ... It's the American way," said WPMD president O'Loughlin. "I don't think our fees are unreasonable. And, if maglev doesn't happen, all of us lose what we have invested."

O'Loughlin, former Allegheny County planning director, identified 21 mostly Pittsburgh firms, in addition to Crawford Parking Corp., in the venture. In the \$147 million first stage, a 5,000-space parking garage would be built behind the Civic Arena and linked to the Port Authority's Steel Plaza subway station by a magnetically levitated shuttle. WPMD is trying to secure funding commitments and government permits for the first segment.

Meanwhile, WPMD and its affiliates are trying to meet Monday's deadline to apply for \$35 million in federal funds to start planning the second phase, \$550 million in maglev extensions to Oakland and the North Shore.

O'Loughlin, 57, of Squirrel Hill, is president of both WPMD and Crawford Parking Corp.; Martha, 56, of O'Hara, is vice president; and Schwer, 66, of Ross, is secretary-treasurer.

While they list their salaries as \$0 with WPMD, the three have already

collected more than \$210,000 combined as project managers and consultants for \$466,000 worth of early maglev studies funded by the Mellon Foundation, the Pennsylvania Department of Commerce and the Pennsylvania Department of Transportation.

O'Loughlin said creating WPMD as a non-profit corporation made it eligible for the Mellon Foundation funding but, more importantly, he said bonds for maglev projects could be sold at more favorable interest rates.

WPMD can pay out money for services and materials, as it already has. But under the law governing non-profit corporations, any "profits" it may someday generate must be reinvested in public projects, such as maglev extensions.

According to documents connected to the projects:

- O'Loughlin and Martha stand to split \$97,500, plus expenses, as \$125-an-hour project consultants if the federal government approves their application for a \$1 million grant for a low-speed maglev feasibility study later this year.

- Crawford Parking is to receive \$2.5 million, and possibly up to \$5 million, as project manager for the \$147 million Civic Arena parking garage-maglev shuttle system.

- When the Civic Arena shuttle is finished, Crawford Parking could collect from \$150,000 to \$200,000 a year for "management and oversight" of the garage and maglev operation. That's out of an estimated \$15 million a year in gross parking revenues that also will be used to pay bonds, operating costs and other obligations.

- Crawford Parking stands to benefit in similar proportions if WPMD builds \$550 million in extensions to Oakland and the North Shore and parking garages for another 10,000 cars.

O'Loughlin said he, Martha and Schwer have taken money out of their own pockets and that some affiliate companies have contributed to project expenses. Otherwise, the affiliates have donated "in-kind" services such as civil engineering and financial modeling.

"The money [O'Loughlin, Martha and Schwer] have received isn't gravy and going into our pockets, because we have to pay other people," O'Loughlin said. "We haven't even covered our own expenses for all the years we've been working on this."

He said Crawford Parking, as project manager, will have to negotiate its future fees with bondholders and a board of directors that will be named to govern WPMD.

"We're the developers, so the more successful maglev is, the more we should get paid," O'Loughlin said.

O'Loughlin and Martha are attorneys and friends who grew up together, working out and playing sports at the University of Pittsburgh, where they went to college, and playing baseball for the Little Pirates.

Martha was a football star for Pitt and the Steelers. When Martha later became president of the Penguins hockey team, at a time the DeBartolo family owned it, O'Loughlin was the county director of planning and development.

Martha is now a partner with the law firm of Eckert Seamans Cherin & Mellott. O'Loughlin is president of O'Loughlin Group, which has developed and holds interests in such properties as the Waterfront and Timbercourt, office buildings on Downtown's Firstside and North Shore.

Schwer, a certified public accountant and owner of a Downtown accounting firm, has been doing work for O'Loughlin and Martha since 1980.

"We're all involved together in [other] personal and business ventures," O'Loughlin said.

Jonathan Hall, president of Hall Industries on the South Side, which builds components for transit systems nationwide and is participating in maglev, credits O'Loughlin for his perseverance.

"If he was not so hard-working, positive and optimistic, if he didn't believe this can be done technically, this project would have stopped long ago," Hall said. "He's fighting a lot of battles. It's a credit to him that he keeps going."

To help keep the project going, WPMD hired a Harrisburg business development and lobbying firm, Delta Development Group Inc., which, in turn, forwards half of its \$8,000 monthly fee to Ann Eppard Associates Inc. That firm is named for a Washington, D.C., transportation lobbyist who is a former aide to U.S. Rep. Bud Shuster, R-Everett, and who still serves as his campaign manager.

As chairman of the House Transportation and Infrastructure Committee, Shuster marshaled a federal transportation spending bill known as TEA-21 that singles out Pittsburgh as eligible for federal funds for the low-speed maglev "pilot project."

TEA-21 also includes \$35 million for "start up costs" and makes WPMD eligible to compete for up to two-thirds of the cost of maglev extensions to Oakland and the North Shore after it builds the Civic Arena section.

O'Loughlin said Delta Group was hired in May 1997 because of its experience putting together grant applications, forging public-private partnerships and influencing government and elected officials. "They're qualified people who are well connected politically," O'Loughlin said.

He said it "wasn't just Shuster," but Republican U.S. Sens. Arlen Specter and Rick Santorum, and Democratic U.S. Reps. Frank Mascara, Bill Coyne, Ron Klink and Mike Doyle who helped get Pittsburgh and low-speed maglev funding in TEA-21.

As for Eppard, who is still under indictment because a Boston grand jury has accused her of taking \$230,000 in illegal payments while serving as Shuster's chief of staff, she's still the choice of many private and public entities, including the Pennsylvania Turnpike.

"She's a tremendous resource for Pennsylvania," said Leroy Kline, president of Delta Development Group. "And for us to have the chairman [Shuster] of that committee is a window of opportunity we may never have again."

O'Loughlin said it isn't as important to WPMD if the money is perceived as congressional "pork" as it is to put Pittsburgh ahead of the competition.

"We're talking about a big opportunity for Pittsburgh and the region," he said. "But you just don't get federal money without making a strong case for it."

WPMD and its three incorporators have been extending their reach beyond Pittsburgh. O'Loughlin, Martha and Schwer formed another non-profit corporation, Southern California Maglev Development Corp.

SCMD is among four finalists for a \$2.7 million feasibility study for the first 60-mile leg of a proposed moderate-speed (up to 150 mph) maglev system in the five-county Los Angeles area. It has also talked to officials in wealthy Orange County, Calif. O'Loughlin said they are looking for "cutting-edge technology" to develop the first five miles of a 28-mile system around Irvine.

O'Loughlin has also talked with officials in Colorado and Austin, Texas, about a low-speed maglev system like the one he is pursuing in Pittsburgh.

"They're all future markets if we're successful here," he said. A dozen of the 22 firms affiliated with WPMD are listed as affiliates with SCMD in the California ventures.



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Is Maglev IN OUR FUTURE?



What Maglev cost so far

Western Pennsylvania Maglev Development Corp. provided information showing it spent a total of \$466,109.79 from 1992 through Dec. 31, 1998. Its officers estimate that affiliates in the Pittsburgh low-speed maglev venture contributed “in-kind” services valued at about \$2.5 million, bringing the total investment so far to about \$3 million.

Income

Mellon Foundation grant	\$165,788.18
Pennsylvania Department of Commerce, a legislative initiative grant also known as walking around money	250,000
Pennsylvania Department of Transportation grant	50,321.61



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Expenses

Recipient	Purpose	Payment
The O'Loughlin Co.	project management	\$78,832.14
R.T. Schwer & Associates	project management	68,392.13
Attorney Paul Martha	project management	64,598.80
Power Superconductor Applications	Maglev engineers	51,095.86
Lockheed and predecessors	Maglev technology work	50,000.00
Wilbur Smith Associates	parking and traffic studies	37,023.00
Mackin Engineering	civil engineering	31,450.00
Eckert, Semans et al	legal services	25,765.00
Williams-Trebilcock-Whitehead	architects	14,010.11
Comark Productions	video producer	7,600.20
Miscellaneous payees	travel expenses	6,989.80
CMU Engineers	Maglev engineers	5,728.51
Hall Industries	Maglev car builder	5,600.00
Resource Development & Management	project consultant	5,000.00
Miscellaneous payees	office expenses	4,794.24
Eric Dagleish et al	consultants	3,821.88
Trans Associates	traffic consultant	1,355.86
Thomas Holowaty, CPA	audit fees	1,350.00
Miscellaneous payees	supplies	1,096.61
Miscellaneous payees	bank charges	818.95

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Is Maglev IN OUR FUTURE?



22 firms supporting maglev parking plan

Western Pennsylvania Maglev Development Corp. President David O'Loughlin identified 22 companies and institutions as WPMD "affiliates" supporting the maglev-parking garage venture financially and/or by providing services. He outlined how affiliates will benefit if the developments succeed.


- International Brotherhood of Electrical Workers (*) – Members would benefit from construction and maintenance jobs. IBEW to buy \$40 million of bonds supporting the project.
- Crawford Parking Corp. (*) – This for-profit corporation, established by the same officers as the Western Pennsylvania Maglev Development Corp., provides project consulting and management of garages and maglev operations.
- Salomon Smith Barney (*) – One of the nation's largest municipal investment banking firms would earn fees marketing bonds to finance the project.
- Mellon Bank (*) – Local bank has worked with WPMD from the start, preparing financial models. Could benefit from investment fees and as local depository for funds.
- Societe Generale – French financing company, which loaned Penguins \$20 million to keep afloat this season, is another financial adviser.
- Franco Construction Co. – Murrysville business specializes in concrete work.
- A & A – North Side design review firm, whose work includes Stage II of the Port Authority's Light Rail system and busways.
- CDI Services Inc. – Lawrenceville electrical contractor.
- Lockheed Martin (*) – Although this national aerospace company sold its maglev technology to General Atomics, it maintains a financial interest in maglev.
- General Atomics (*) – San Diego firm is to provide the superconducting magnets, electromagnetic braking and subsystems for

Pittsburgh maglev.

- P.J. Dick Inc. (*) — West Mifflin contractor would build the parking garage, elevated guideway and maglev stations.
- Sargent Electric Co. (*) — Pittsburgh-based company would be lead electrical contractor for everything from power supply to lighting.
- Union Switch & Signal Co. (*) – This company located in Pittsburgh Technology Center would supply and install switches, signals, communications and safety devices.
- Mackin Engineering Co. (*) – Moon consultant that prepared preliminary drawings would do the final civil engineering work for parking garages, guideway and stations.
- Hall Industries (*) – South Side company, which has been increasing its transit business base nationally, would build the maglev frames and car bodies.
- Eckert Seamans Cherin & Mellott – Pittsburgh law firm would serve as counsel for bonds sold to finance the parking and maglev. Paul Martha, vice president of WPMD and Crawford Parking Corp., is a partner in the law firm.
- Delta Development Group Inc. (*) – Camp Hill, Pa., consulting and lobbying organization helps line up funding and political support. Crawford Parking Corp. is paying Delta to try to make WPMD's project a reality.
- Dodaro Kennedy & Cambest — Forest Hills law firm is to provide legal advice, and services through its affiliated Resources Development & Management Inc.
- Wilbur Smith and Associates – A national traffic consultant. Paid \$37,023 for traffic studies and parking garage market study for WPMD.
- Tasso Katselas Associates (*) – Oakland architect who designed Pittsburgh International Airport is handling architectural design for maglev stations and parking garages.
- Quality Services Inc. – Would provide maintenance and security for WPMD project. Same firm provides personnel for the Pittsburgh Downtown Ambassadors program.
- Civic Arena Parking Corp. – The present operator of surface parking lots around the Civic Arena would operate the 5,000-space parking garage that would replace the lots.

** — These firms have been identified as primary "team members" in a proposal for the Federal Transit Administration.*



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