

SOUND TRANSIT

MOTION NO. M2000-10

Authorizing the Funding of Eleven Projects under the Research and Technology Fund Program BACKGROUND AND COMMENTS

Meeting:	Date:	Type of Action:	Staff Contact:	Phone:
Finance Committee	1-20-2000	Action	Agnes Govern, Director, Regional Express	(206) 398-5037
Executive Committee	1-21-2000	Deferred	Barbara Gilliland, Program Manager, Systems Integration	(206) 398-5051
Finance Committee	2-17-2000	Action	Nick Roach, Project Manager, Research and Technology	(206) 398-5083
Executive Committee	2-18-2000	Concurrence		
Board of Directors	2-24-2000	Action		

ACTION:

Approval of Motion No. M2000-10 authorizes the distribution of Research and Technology Funds for nine projects identified below. Total cost for the eleven recommended projects would be \$1,342,000, ranging from \$31,000 to \$263,000.

BACKGROUND

The Research and Technology Fund was included in Sound Move to provide the Board the flexibility to address issues related to new and emerging technology over the course of the ten-year plan that were not central to the core mission of the agency—the delivery of the public transportation services and facilities identified in Sound Move.

The Board included \$30 million in a Research and Technology fund, which would be used to explore new technologies that could be, where practical, incorporated into the implementation of existing services or to provide the Board with the information which could be used in developing future phases of Sound Transit. Through this fund, Sound Transit will “evaluate...innovative ways to provide transit service, reduce dependency on single occupancy vehicles, improve public transportation’s cost effectiveness, and better respond to customer needs” (Sound Move). The fund will provide Sound Transit the ability to assess and operationally test “technological innovations (e.g.; alternative fuels and propulsion systems, quieter equipment, lighter equipment and vehicles, energy efficient engines, etc.), ways to improve passenger comfort, and ways to reduce impacts on the environment” (Sound Move).

Sound Transit initiated its first round of project selection this fall. The fund is broken down into two program areas: the Transit System Enhancements (TSE) program and the Alternative Transit Technologies (ATT) program. Projects funded under the TSE program enhance existing bus and rail systems operated by Sound Transit’s three lines of business or its regional transit agency partners. Based on Board policy, 80% of the funds available for projects are to be for this program. Projects funded under the ATT program are intended to consider transit technologies and services Sound Transit’s three lines of business do not currently address. These types of technologies, if shown to be of promise, may be applied during future phases (after 2006). The ATT program will be funded at the remaining 20% of the funds.

Under the TSE program, projects were identified by consensus by the regional transit agency committee which is made up of representatives of all three of Sound Transit's lines of business, the region's other transit agencies and the Washington State Transportation Center. The projects may address near-term, mid-term, or long-term needs. Emphasis was to be placed on those projects that met the policy objectives in Sound Move and enhance the operations of more than one transit agency. The process to select projects under the ATT program functioned like a traditional, competitive grant program. Project applicants were asked to submit a formal grant application. Any public, private, or non-profit entity was eligible to submit a grant application, though a public agency had to "sponsor" any private or non-profit application. Again, scoring emphasis was placed on those projects that met the policy objectives in Sound Move and other transit agency plans.

Upon receipt of all TSE and ATT candidate projects, the regional transit technology committee evaluated the projects to assess their ability to promote the following Board approved goals:

- Enhanced rider comfort levels.
- Improved rider convenience.
- Enhanced transit service reliability and predictability.
- Improved operating efficiencies.
- Reduced emissions levels of harmful pollutants.
- Reduced reliance on the automobile as the primary mode of transportation.
- The "Smooth Ride" seamless transit trip concept.
- The greatest possible Sound Transit service area-wide equity.

Based on this evaluation, nine projects were selected--two ATT projects and seven TSE projects. The table below shows the recommended nine projects and the recommended funding allocations. Attachment A provides a more detailed summary of the projects. Attachment B provides a staff assessment of the goals that each project addressed.

PROJECTS	FUNDING REQUEST
Elliot Bay Water Taxi*	\$128,000
Buslorry Feasibility Study*	\$120,000
Closed Circuit Television Cameras for Bus and Commuter Rail Security ¹	\$175,000
Mobile Data Communications for Bus and Rail Automatic Vehicle Location ¹	\$263,000
Regional Automatic Trip Planning ¹	\$205,000
Transit Signal Priority Feasibility Assessment for MLK Blvd. and Other LRT Alignments ¹	\$31,000
E-Commerce Application for Fare Media ¹	\$45,000
Real-Time Transit Traveler Information System Support ¹	\$200,000
Multi-modal Advanced Traveler Information Systems at Transit Centers and Train Stations ¹	\$75,000
ETC Downtown Circulator Loop Evaluation*	\$50,000
Lake Washington Water Taxi Feasibility Study*	\$50,000
TOTAL	\$1,342,000

*Alternative Transit Technology Projects

¹Transit System Enhancement Projects

FUNDING:

The Adopted 2000 Budget and Capital Plan included \$1.564 million (YOE \$) for the Research and Technology program as a whole. \$1,342 million in proposed projects has been identified as detailed

above. This leaves a balance of \$222,000 available for additional Research and Technology activities in 2000. Project agreements will be entered into with grantees for payment of the Not To Exceed recommended amounts.

RELEVANT BOARD POLICIES AND PREVIOUS ACTIONS TAKEN:

- Adoption of Sound Move, The Ten-Year Regional Transit System Plan (May 31, 1996). Sound Move calls for a fund to be established that considers technologies and services that would aid in keeping Sound Transit's equipment and services up-to-date. Sound Move allocated \$30 million over the ten-year implementation period to the Research and Technology Fund.
- Motion No. M98-74. Adoption of the basic program elements of the Research and Technology fund program.
- Resolution No. R99-33. Adoption of the Year 2000 budget.

ALTERNATIVES:

The Board could move forward with just the Transit System Enhancement projects at this time. There has been much discussion by the Finance and Executive Committees regarding the Elliot Bay Water Taxi project and the possible funding of the Elevated Transportation Corporation's Monorail Feasibility Study. Both of these projects fall under the Alternative Transit Technology account of the Research and Technology fund, and are included in this motion. On February 17, 2000, the Finance Committee took action to recommend approval of both the Monorail Feasibility study and a Lake Washington Water Taxi Feasibility study.

CONSEQUENCES OF DELAY:

Delay on funding for only one of the Transit System Enhancements projects (Real-time Transit Traveler Information System Support) would result in the termination of the current operating program. Re-starting the terminated program after a delay will add additional costs to the project.

LEGAL REVIEW:

MBL 2/14/00

SOUND TRANSIT

MOTION NO. M2000-10

A motion of the Board of the Central Puget Sound Regional Transit Authority approving the distribution of \$1,292,000 of Research and Technology funds.

Background:

The Research and Technology Fund was included in Sound Move to provide the Board the flexibility to address issues related to new and emerging technology over the course of the ten-year plan that were not central to the core mission of the agency—the delivery of the public transportation services and facilities identified in Sound Move.

The Board included \$30 million in a Research and Technology fund, which would be used to explore new technologies that could be, where practical, incorporated into the implementation of existing services or to provide the Board with the information which could be used in developing future phases of Sound Transit. Through this fund, Sound Transit will “evaluate...innovative ways to provide transit service, reduce dependency on single occupancy vehicles, improve public transportation’s cost effectiveness, and better respond to customer needs (Sound Move).”

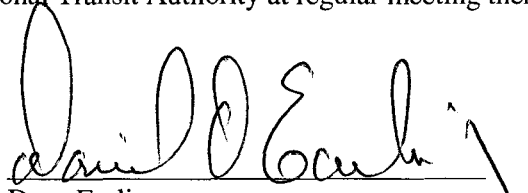
This is the first year that Sound Transit initiated a process to actively solicit, evaluate, and select candidate projects seeking Research and Technology funding. The Executive Committee, at its September 17, 1999 meeting, received an overview of the process for selecting projects for funding. A team of Sound Transit staff and staff from the region’s other transit agencies and the Washington State Transportation Center came together to evaluate and select a number of candidate projects using criteria established by the Sound Transit Board in 1998.

Motion:

It is hereby moved by the Board of the Central Puget Sound Regional Transit Authority that the distribution of a total of \$1,292,000 from the Research and Technology fund account be approved for the following projects as described in Attachment A:


	PROJECT	FUNDING
1.	Elliot Bay Water Taxi	\$128,000
2.	Buslorry Feasibility Study	\$120,000
3.	Closed Circuit Television Cameras for Bus and Commuter Rail Security	\$175,000
4.	Mobile Data Communications for Bus and Rail Automatic Vehicle Location	\$263,000
5.	Regional Automatic Trip Planning	\$205,000
6.	Transit Signal Priority Feasibility Assessment for MLK Blvd. and Other LRT Alignments	\$31,000
7.	E-Commerce Application for Fare Media	\$45,000
8.	Real-Time Transit Traveler Information System Support	\$200,000
9.	Multi-modal Advanced Traveler Information Systems at Transit Centers and Train Stations	\$75,000
10.	Lake Washington Water Taxi Feasibility Study*	\$50,000
	TOTAL	\$1,292,000

Approved by the Board of the Central Puget Sound Regional Transit Authority at regular meeting thereof on the 24th day of February 2000.



Dave Earling
Board Chair

ATTEST:



Marcia Walker
Board Administrator

Executive Committee Motion No. M2000-10

Attachment A – Recommended Project Summaries

ALTERNATIVE TRANSIT TECHNOLOGY PROGRAM

1. *Elliot Bay Water Taxi*

Project Applicant: King County Metro

Project Cost: \$128,000

Project Start Date: March 2000

Project End Date: November 2002

Project Description: This project would provide for operating funds to assess year-round operations of the Elliot Bay Water Taxi. The ability to provide the Elliot Bay water taxi service on a regular basis, year-round, will provide information as to the viability of water transportation to address transportation needs in the Puget Sound region. Regular operation of the Elliot Bay water taxi will also include evaluating innovative technology that may increase the feasibility of the service. Such technology will be considered in the areas of vessel design (high speed, low wake), ADA accessibility, fare collection, and transporting bicycles.

2. *Buslorry Feasibility Study and Implementation Plan*

Project Applicant: Entranco Engineers. City of Bellevue and Sound Transit are sponsoring public agencies.

Project Cost: \$120,000

Project Start Date: January 2000

Project End Date: December 2000

Project Description: This project would examine the feasibility of the combining courier and package delivery service with transit riders on specially-equipped ST Express coaches. This technology, called a buslorry, has the potential to allow courier companies to transport packages and goods on a passenger bus that is able to access HOV lanes, which reduces travel time, and increases delivery reliability. Likewise, the additional revenue generated by the Buslorry allows transit operators to operate routes that generally have not been cost-effective, due to low passenger revenues. The concept is being applied in Sweden and Germany.

Project funding will support a test of operating both passenger and freight service in a heavily traveled corridor such the Bellevue-SeaTac corridor. Both Sound Transit and King County Metro operate service in the corridor (routes 570 and 340, respectively), and could access the I-405 HOV lanes during the congested peak periods.

One of the initial questions that have to be addressed concerns the legality of using publicly funded transit service for private courier services. There is also an issue of whether current private carriers would find this service of financial benefit to their companies. These issues will be addressed in the early phases of the project.

3. *Lake Washington Water Taxi Feasibility Study*

Project Applicant:

Project Cost: \$50,000

Project Start Date: March 2000

Project End Date: June 2000

Project Description: This project will test the feasibility of operating water taxi service as a viable transportation option for commuters who cross Lake Washington. The study may consider the following topical areas:

- ◆ Route structure
- ◆ Docks and other capital needs
- ◆ Boats
- ◆ Park-and-ride needs
- ◆ Circulator/access needs (buses, vans, autos)
- ◆ Ridership
- ◆ Potential revenue and expenditure forecasts
- ◆ Development of an implementation plan and timeline

Other Projects Considered

- **Environmental Impacts of Elevated Transit: A Study of Visual and Noise Impacts within Designated Intermediate-Capacity Corridors**—Elevated Transportation Company
- **SeaTac New Transit Technology Project**—City of SeaTac

TRANSIT SYSTEMS ENHANCEMENTS PROGRAM

1. Closed Circuit Television Cameras for Bus and Commuter Rail Security Operations

Agency(s): King County Metro and Sound Transit

Project Cost: \$175,000

Project Start Date: February 2000

Project End Date: December 2000

Project Description: The project will entail the first phase of procurement and testing of closed circuit television cameras to be installed on 20 Sound Transit and 20 King County Metro buses. In addition, cameras will be installed on eight Sounder Commuter Rail station platforms within the Tacoma-Seattle corridor. These funds can be used as local match for other grants to expand the network of cameras.

2. Mobile Data Communications for Bus and Rail Automatic Vehicle Location

Agency(s): Sound Transit, Community Transit, Pierce Transit and Washington State Transportation Research Center

Project Cost: \$263,000

Project Start Date: March 2000

Project End Date: March 2001

Project Description: The project will test the ability of wireless telecommunications systems now emerging on the market to provide reliable Global Positioning System (GPS)-based information for transit Automatic Vehicle Location (AVL) purposes. AVL information has proven quite useful in helping improve transit speed and reliability and for customer service information.

The project will provide real-time location of selected Sound Transit, Pierce Transit and Community transit vehicles and to agency personnel throughout duration of the test. The project will demonstrate the value of vehicle location information for ST and partner agencies as well as identifying the cost implications of a possible implementation. If test is successful, the preferred technology could be used to supply GPS information for region-wide fleet management without (or prior to) implementation of a new regional radio system, potentially freeing up valuable channels for voice communications.

3. Regional Automatic Trip Planning

Agency(s): Pierce Transit and Sound Transit

Project Cost: \$205,000

Project Start Date: February 2000

Project End Date: December 2000

Project Description: Phase 1 of the project involves assisting Pierce Transit with the development of its Regional Automatic Trip Planning System implementation. This is an ongoing regional project that involves METRO, Sound Transit, Community Transit and Pierce Transit. Funds requested will pay for technical and project management services during the implementation of the system. These services are required to keep this project on track through implementation beginning early in 2000.

Phase 2 of the project involves providing trip information directly to customers via the Internet. Included in this project is the installation of interactive kiosks at major transit centers that provide Internet-based trip information to transit customers. This project will give customers the ability to plan their own trips at their convenience. Additionally, web-enabled trip planning should help stem the need to increase customer services staff as customers will begin planning their own trips and will become more familiar with local bus system operations.

4. *Traffic/Transit Flow Optimization for Martin Luther King Blvd. and Other Surface LRT Alignments (Signal Preemption for light rail vehicles)*

Agency(s): Sound Transit and King County Metro.

Project Cost: \$31,000

Project Start Date: March 2000

Project End Date: December 2000

Project Description: King County Metro is in the early implementation phase of a Transit Signal Priority (TSP) program for buses throughout King County. They have established agreements with most municipal traffic departments and are currently testing a vehicle communications system using 'RF Tag' technology along South Rainier Avenue. These devices communicate both with Metro dispatch and with local traffic signal controllers to provide an intelligent signal prioritization. As newer, intelligent buses are added to the fleet, this system is capable of communicating more information relevant to the decision about signal prioritization for transit vehicles. Information such as whether the bus is dead-heading or in active service, passenger loading data, schedule information (early, on-time or late) and other factors can be transmitted to the wayside. The system also provides municipal traffic engineers with the capability to set parameters for transit signal priorities.

Sound Transit Link also will require communications with traffic signal controllers to provide for preemption of traffic signals. By coordinating the needs of each agency, there should be benefits for both. Its desired to also optimize the traffic signal system and minimize waiting time for along-track and cross-track vehicular movement as well.

The first phase of this study will involve engineering time to evaluate the system from a vehicle and train-to-wayside communications standpoint. Link systems engineering must determine whether it will work for Link and what other features Sound Transit might wish to implement. Communications of train subsystems status would be beneficial in terms of fleet maintenance.

5. *E-Commerce Application for Fare Media*

Agency(s): Pierce Transit

Project Cost: \$45,000

Project Start Date: February 2000

Project End Date: December 2000

Project Description: The project will establish a "store front" on the world wide web where customers can purchase fare media directly via credit cards, debit card, checks, etc. The project will include software modifications of the Pierce Transit web site to enable secure customer payment transactions and an on-line automatic payment verification system for various fare media. The project will also include

the integration of the web-based system into Pierce Transit's current point-of-sale system so that transactions are automatically recorded and integrated into its existing order processing system.

The web-based software developed under this project can be copied and made available for the regions' other transit agencies to develop similar web-based applications.

6. *Real-Time Transit Traveler Information System Support*

Agency(s): Sound Transit, King County Metro, and University of Washington

Project Description: This project would continue to provide financial support for a program that provides transit vehicle arrival and departure predictions at transit facilities and on computers linked to the world-wide web. Some of the projects that have been built off of this platform include TransitWatch, BusView and MyBus. The project takes automatic vehicle location (AVL) data from King County Metro buses--and Sound Transit buses operated by King County Metro--and through various software routines developed by staff at the University of Washington, produces information that is accessible to transit customers. Vehicle location information from Sounder trains could also be integrated to this system at a later date (see project below).

King County Metro had anticipated absorbing the maintenance function of the system, however, due to I-695 financial constraints, was unable to do so. Funding for the system will terminate on February 15. The project will allow the system to continue to operate while the region determines its long-term status.

Project Cost: \$200,000

Project Start Date: February 2000

Project End Date: September 2000

7. *Multi-modal Advanced Traveler Information Systems at Transit Centers and Train Stations*

Agency(s): Sound Transit, WSDOT, Washington State Transportation Research Center

Project Cost: \$125,000

Project Start Date: July 2000

Project End Date: June 2001

Project Description: This project will supplement an effort by the Washington State Transportation Center (TRAC) to build a multi-modal traveler information center at major transit centers in the region. The project will incorporate real-time bus and commuter rail location data to produce arrival and departure information at an electronic kiosk or reader board at the King Street Station and Tacoma Dome Stations. These applications will be built off of the system that TRAC is currently developing for the Everett Multi-Modal station.

The project will implement the use of global positioning systems (GPS) technology on Sounder trains and King County Metro's sign-post AVL system for Metro and ST Express buses.