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Year 2001 UCD-ITS-RR-01-10

Evaluation of UC Davis Long-Range Transportation, Land-Use, and Housing Plans: Examining the potential for Innovative Mobility Pilot Projects

2001-12-01

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CALIFORNIA PATH PROGRAM
INSTITUTE OF TRANSPORTATION STUDIES
UNIVERSITY OF CALIFORNIA, BERKELEY

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California PATH Working Paper
UCB-ITS-PWP-2001-18

This work was performed as part of the California PATH Program of the University of California, in cooperation with the State of California Business, Transportation, and Housing Agency, Department of Transportation; and the United States Department Transportation, Federal Highway Administration.

Report for Task Order 4128

December 2001

ISSN 1055-1417

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ACKNOWLEDGEMENTS

This work was performed as part of MOU 4128 for the California PATH Program of the University of California, in cooperation with the State Department of Transportation. The authors would like to acknowledge the University of California, Davis and the Institute of Transportation Studies-Davis for their contributions to this study.

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1.0 INTRODUCTION

1.1 Project Overview

At present, the City of Davis, surrounding communities, and the UC Davis campus are struggling with many of the same transportation problems that plague larger urban centers including increasing traffic, limited parking, and challenges to effective operation of the public transit system. The campus is expecting to grow by 6,000 students in the next ten years (plus approximately 3,000 faculty and staff) and is developing a Long-Range Development Plan (LRDP) that will serve to guide this growth. This plan will include housing, traffic control, parking, alternative transportation modes, and interactions with the broader community.

The development of the LRDP provides a unique opportunity for the Institute of Transportation Studies-Davis (ITS-Davis), the University of California (UC)-wide Partners for Advanced Transit and Highways (PATH) program[1], and Caltrans to provide input and advice on mobility options that will help the campus accommodate the expected growth while minimizing negative transportation impacts. The integrated nature of the LRDP also provides an opportunity to look at transportation options from a broader perspective then is usually possible under traditional planning scenarios. Thus creating an opportunity to evaluate a variety of innovative advanced information and mobility packages that could be implemented on a pilot scale in the coming years. These advanced technologies include dynamic ridesharing, carsharing, neighborhood electric vehicles, linkages between housing and access to shared-use automobiles, integration between modes, information kiosks, and other mobility packages that might prove effective at reducing the demand for single occupancy vehicles associated with campus.

This report reflects an initial scoping that is intended to inform a broader multi-year project. The goals are to:

1) Participate in the campus LRDP process and provide advice on reducing transportation impacts.
2) Evaluate a range of advanced information technology options that might increase mobility with minimal impact.
3) Initiate pilot projects for demonstrating the viability of a few of the most promising mobility packages, utilizing advanced information technologies.

The development of pilot projects would create partnerships among academia, government, private industry, and public interest groups. Many factors are converging that would indicate this project has a high likelihood of success.

1) The California Air Resources Board has recently indicated that automobile manufacturer's that place advanced technology cars in shared-use applications could

[1] The California PATH program is a collaboration between Caltrans and the University of California that explores advanced technological solutions to transportation problems, employing a multidisciplinary research approach.

receive additional zero emission vehicle (ZEV) credit. This has created the potential for partnerships between automobile manufacturers and the operators of shared use systems.

2) Information technologies are rapidly advancing to a stage where these technologies can contribute to new mobility options and reduced traffic and negative impacts of single occupancy vehicle transportation.
3) The UC Davis campus is excited about new opportunities created by the LRDP and the participation of ITS-Davis.
4) State and local regulators responsible for reducing congestion and improving quality of life are looking for new ideas and approaches to accomplish their mandates.

The purpose of the more limited project (the subject of this report) is to:

1) Begin a general assessment of the campus and the City of Davis.
2) To introduce the project to key players and develop potential partners.
3) To make recommendations for how to proceed with the broader project.

2.0 UC DAVIS CAMPUS

The goals for this limited assessment were to:

1) Garner campus support and financial contributions to the project.
2) Gain a stronger understanding of the LRDP process and the relevant planning documents.
3) Introduce the relevant departments and staff to the project.
4) Determine the optimal working arrangements between ITS-Davis/PATH and the LRDP and for a long-term working relationship.

2.1 Long Range Development Plan (LRDP)

Initial meetings with the Office of Resource Management and Planning regarding the LRDP indicated that the Department was formulating options, goals, milestones, avenues for public involvement, and soliciting input from other campus departments.

The operating goals for the LRDP were defined as follows:

1) Create a physical framework for a diverse and dynamic academic program.
2) Manage campus lands and resources in a spirit of stewardship for the future.
3) Enrich campus life and serve the greater community.

The development, environment, and growth principles that the LRDP will adhere to indicate the need for sound transportation planning. These principles include:

1) Keeping students, faculty, and staff connected to the campus community.

2) Allow people to walk, bike or shuttle to campus.
3) Conserve land, reduce air impacts and transportation impacts
4) Encourage resource efficiency and energy conservation.

To bracket the range of possibilities and understand impacts, the LRDP outlined two scenarios for how the campus might accommodate the anticipated growth. The first scenario, called the "baseline" envisioned housing 25 percent of the student population on campus. The second scenario, called the "expanded growth scenario," would house 90 percent of students on campus, 75 percent of faculty and 40 percent of staff. Under the expanded scenario, the campus would take responsibility for building and creating housing and communities. Under the Baseline scenario housing would fall to the City of Davis and surrounding communities. The success of either scenario at accomplishing the goals outlined for the LRDP will depend in large part on the transportation infrastructure that is developed to accommodate the growth. Under either scenario, there is clearly room for input from ITS-Davis for creative solutions that would maintain the quality of life and community cohesion of the campus and the surrounding communities.

Due to the location of the campus and that the student and faculty population overflow into the surrounding communities, the LRDP should consider multi-jurisdictional issues. These include interactions with Yolo, Solano, and Sacramento counties, the City of Davis, and other surrounding communities. This includes multiple land-use policies, different growth orientations, housing, and transportation, policies. The campus is looking for mechanisms to create joint-agreements and considers the local air quality management district (AQMD) as a possible forum because it oversees an air basin that encompasses many jurisdictions.

The timeline for the LRDP is as follows:

June-September, 2001	Data collection/Analysis/Metrics & Paradigm Development
October-December, 2001	Alternatives Development & Evaluation
January-May, 2002	Refinement of Preferred Plans
June-July, 2002	Final LRDP
2002-2003	Environmental Impact Report and public comments
Fall, 2003	Board of Regents approval of final LRDP

The campus chose Moore, Iacofano and Goltsman, Inc. (MIG) as the prime contractor for the development of the LRDP. Furthermore, in a unique partnership, the campus selected William McDonnough and Associates to provide vision, community, and environmentally sensitive solutions. McDonnough and Associates are known for innovative land-use and building design. For ITS-Davis this provides an ideal opportunity since vision and "out-of-the-box" thinking are key to innovative mobility solutions and the use of information technologies to reduce transportation impacts. ITS-Davis looks forward to an invigorating and rewarding relationship with McDonnough and Associates.

Preliminary contact with campus revealed support for ITS-Davis' participation in creating innovative transportation solutions at the highest levels, including a letter of support from the Chancellor, Larry Vanderhoef.

In order to ensure participation from ITS-Davis, the Office of Resource Management and Planning provided $52,000 in financial support. These funds are to enable ITS-Davis to participate in the development of the LRDP.

Overall, initial contacts with campus indicate enthusiasm for the project and an openness to review new transportation ideas within the context of the LRDP.

2.2 Housing and Transportation Departments

Transportation and housing are key to the successful implementation of innovative mobility options for the LRDP and longer range pilot projects. Therefore, initial efforts focused on making contact with the relevant departments and gaining a stronger understanding of the goals, constraints, and operating procedures for these departments.

Transportation & Parking Services (TAPS):

Transportation & Parking Services (TAPS) was established in 1987 to support the University's need to fund and coordinate campus access needs. TAPS is responsible for parking access and alternative modes on campus.

Parking Services is a self-supporting division of TAPS financed solely by user (parking permit holder) fees. There are 75 acres of parking on campus. Parking Services is evaluating a variety of options to accommodate the expected growth and additional parking demand. Options include additional structured parking near the core of campus at a cost of $12,000 per space or surface parking on the periphery of campus. Surface parking is significantly less expensive than structured parking at $3,000 per space. However, costs to provide a shuttle from outlying parking areas increases costs making this option becomes more expensive then the structured parking.

Parking Services' mission is not to reduce the demand for parking on campus (i.e., encouraging carpooling, bus, or biking). Rather, Parking Services must provide adequate and convenient parking per demand. However, Parking Services was interested in learning more about innovative mobility solutions and understanding if these ideas could reduce the demand for parking on a per capita basis.

The UC Davis Alternative Transportation Program (ATP) is a program within TAPS that provides the campus community with programs and incentives that encourage ridesharing. The goal is to enhance the campus environment by helping to improve air quality, reduce traffic congestion, and minimize campus resources dedicated to accommodating automobile parking demands. The ATP is comprised of the following: Carpool Program; Vanpool Program; Transit Program; Bicycle Program; UCD/UCDMC Intercampus shuttle; Emergency Ride Home Program; Transportation Centers;

interactions with other agencies involved in local and regional transportation provision and planning; and endeavors to secure extramural funding for transportation projects. ATP also coordinates with the Intercampus Shuttle to Berkeley and Unitrans.

Unitrans:

Unitrans started service as the bus system for UC Davis in 1967. In 1972 the system was opened to the general public when the City of Davis began to participate with funding for the system. In 1989 undergraduate students passed a "no fare" option, setting a quarterly fee and eliminating cash fares for undergrads. Ridership on the system has expanded from 75,000 riders in its first year of operation to 2.5 million riders a year currently. Eighty-five to ninety percent of the riders are undergraduate students, and 94 percent of Unitrans riders are traveling to or from the campus.

Unitrans has a $2.7 million operating budget. The system receives federal funds through the City, state funds through the City, and revenue from a dedicated student fee.

All but 15 of Unitrans' 200 employees are University students working part time while attending college. Unitrans operates its own full service maintenance facility.

Discussions with Unitrans indicate that two major constraints to the system are recruiting and keeping drivers. and the maintenance facility is full. Unitrans views itself as both reactive and proactive within the LRDP process. Unitrans will respond to scenarios that are presented to it during the LRDP process. At the same time, Unitrans has its own vision of what would work best, based on knowledge of ridership and student needs. Unitrans is interested in creating better links with other transit companies, including long distance carriers and modes. Unitrans is interested to learn how advanced information systems could enhance service leading to a seamless transition between modes and transit companies.

Student Housing:

Student housing is proactive about the LRDP and the role that housing plays in the success of students. For the LRDP, Student housing recommends a continuation of campus strategy to build and own housing for first year students and seek private partners for continuing and graduate students. Student housing also recommends that the campus plan to house 35 to 45 percent of students on campus. This is a middle ground recommendation between the two scenarios identified in the LRDP.

In the past many students have lived in privately operated apartments that are in close proximity to the campus, helping to create a community or "residential feel." Already much of the apartment construction of the last few years has been "outside the highways." The next increment of growth will not provide the easy access housing for students that has been part of campus community. Interactions between students and among students and faculty contribute to the impact of college on students. To the extent that greater numbers of faculty, staff, and students live further from campus, the potential

for high levels of interactions will decrease. The choice of how the campus will accommodate the increase student and faculty population will have a significant impact on interactions with the City of Davis and surrounding communities. The City of Davis is committed to the "small town" atmosphere and has a policy for slow, controlled growth. Student housing is evaluating a range of housing scenarios both on and off campus to accommodate the expected growth.

Student housing has also been evaluating the best policy regarding student parking on campus associated with the residence halls. In a survey of other UC campuses, student housing found that:

- UCB students (all classes) who live on campus or within two miles of the campus are not eligible for parking.
- UCLA students (all classes) living on campus and in certain zip codes are not eligible for parking.
- UCSC allows no freshman resident parking on campus, and only 100 spaces are reserved for sophomores by exception.

This information helped UC Davis student housing formulate a policy of no parking on campus for first year students beginning in September 2002.

Student housing is enthusiastic about working with ITS-Davis on innovative mobility projects. Student housing is especially interested in linkages between housing developments and alternative modes, including advanced information services and shared-use automobiles. Methods for keeping the students out of cars once they move off campus were also of interest to student housing. Insurance and costs of innovative mobility systems were of concern to Student Housing. Student housing is also aware that students, especially freshmen, have different travel patterns then found in the non-student world. Students often don't need a car during the week, but require the ability to travel longer distances on weekends to visit family and friends.

2.3 Documents Reviewed

- Overview of Unitrans. No author/date
- Unitrans Mission Statement. Created Spring 1997
- Student Enrollment and Unitrans Ridership
- UC Davis Student Housing Issues and Data for Future Decisions. Student Housing Long-Term Planning Sub-Committee. Revised March 2001
- Summary of UC Parking/Residence Policy
- Draft Long Range Access Plan 2001-2010. Transportation and Parking Services, University of California, Davis. October 2000
- Parking Space Utilization Survey. Transportation and Parking Services. May 14-16, 2001
- Parking Space utilization Survey. Transportation and Parking Services. February 5-7, 2001

- UC Davis Long Range Development Plan 1992-2005. An update of the 1989 Plan. Prepared by the UC Davis Planning and Budget Office. Reprinted in August 2000.
- Sections 4.1 (land-use), 4.2 (population, employment and housing), 4.3 (traffic, circulation, and parking), 4.4 (noise), and 4,5 (air quality) of the 1994 Draft Environmental Impact Report

2.4 Campus Contacts

Numerous meetings were conducted with key players on Campus. Some meetings were conducted in small group settings to encourage brainstorming and cross-fertilization between departments. Other meetings were held individually for more specific data and to develop stronger working relationships. Key meeting participants include:

Robert Segar
Director of Physical Planning
Office of Resource Management and Planning

Anthony Palmere
Assistant General Manager
Unitrans

Cliff Contreras
Interim Director
Transportation and Parking Services

Sidney England
Environmental Planner
Office of Resource Management and Planning

Pat Kearney
Executive Director
Student Housing and Financial Aid

2.5 Recommendations

Based on interviews, discussions, and preliminary review of the material provided, the following recommendations have been formulated to assist further development of innovative mobility projects.

1) ITS-Davis should participate in campus planning dialogues for the development of the LRDP and provide recommendations to the Campus that will improve mobility options for students, faculty, and staff under whichever scenario becomes the preferred option.

2) ITS-Davis should create a separate advisory working group that includes the relevant department heads and faculty from campus, as well other outside participants (e.g., Caltrans, who funded this study).

3) Both the LRDP and ITS-Davis researchers working on innovative mobility projects will benefit from close communication between McDonnough and Associates.

4) ITS-Davis researchers in the area of innovative mobility should look broadly at land-use plans, goals, and planned developments in the communities surrounding the UC campus and in Yolo, Solano, and Sacramento Counties. However, once a broad understanding of the issues relevant to each jurisdiction is gained, the potential pilot projects would need to focus on areas identified as prospective locations for pilot projects.

3.0 CITY OF DAVIS INFORMATION

The City of Davis was incorporated in 1917. In 1990 the population of the City was 46,322. By 2000 the population had grown to 57,900, and it is expected to reach 65,260 by 2010 and remain at that level for the next decade.

The City of Davis is known for the progressive outlook of residents and public officials. Quality of life, environment, and community are highly valued. The 1999 General Plan for the City of Davis outlines goals and directions for the City to maintain the lifestyle and amenities that residents expect. Chapters of the 1999 General Plan reviewed, include: Land Use and Growth Management, Mobility, Urban Design and Neighborhood Preservation, and Housing.

A review of these elements of the 1999 General Plan indicate that the City of Davis is well aware of the role that transportation plays in a strong community and has implemented some of the most progressive land-use and transportation demand management programs in the country. For example, the General Plan indicates that planning should:

- Create and maintain housing patterns that promote energy conserving transportation methods.
- Support the opportunity for efficient public transit by siting large apartment complexes on arterial streets, in core and near neighborhood centers and the University.
- Encourage a clean, quiet, safe and attractive transportation system that harmonizes with the city's neighborhoods and enhances quality of life.
- Promote alternative transportation modes such as bicycling, walking, public transit and telecommuting.
- Promote the use of electric vehicles and other low-polluting vehicles, including Neighborhood Electric Vehicles.
- Require new development designs that maximize transit potential.

- Reduce automobile use by improving transit service and encouraging transit use.
- Develop alternative transportation solutions that will help alleviate peak hour congestion.

In 1991, UC Davis and the City of Davis prepared a "joint TSM Plan Study." The purpose of the study was to identify various options for reducing single occupancy vehicle trips by residents, students and employees in Davis.

In 1992, the City Council initiated an alternative fuel test program to experiment with various clean fuel technologies and provide public education.

In 1994, the City's Alternative Transportation Task Force (ATTF) was created by City Council resolution and charged with exploring "the potential for increasing the use of transportation modes that provide an alternative to gasoline or diesel fueled automobiles.

Both the language in the 1999 General Plan and the previous City County action indicate a strong commitment to alternative transportation modes to support the quality of life that Davis residents expect. The City of Davis could be an ideal partner for developing and testing innovative mobility pilot projects.

The transit system for the City of Davis is comprised of Unitrans, which serves the general public in addition to UC Davis students; and Yolobus, which is operated by the Yolo County Transit Authority and serves Davis, Woodland, Winters, West Sacramento, and other smaller towns in Yolo County. In addition, Amtrak Rail, Greyhound bus and Baylink bus all serve Yolo County and operate from the historic station in the Davis central city. All of these transit agencies could participate in innovative mobility pilot projects.

Initial discussions with Davis civic leaders indicated that a formal resolution from the City Council was the best approach for pursuing innovative mobility pilot projects. Key members of the City Council have interacted with the Institute of Transportation Studies-Davis in other forums and are receptive to exploring innovative methods to reduce the impacts of transportation. Indeed, City Council persons have expressed interest in a small electric circulator shuttle that would operate in the downtown area and between the City and UC Davis.

In addition to initiating a City Council resolution in support of innovative mobility pilot projects, the authors recommend scheduling a formal presentation to the Alternative Fuel Task Force to initiate a more formal arrangement for testing innovative mobility projects among ITS-Davis, PATH, Caltrans and the City.

The City of Davis has expressed concern about the growth of the UC campus and the potential negative impacts on the City, including parking and congestion. The participation of ITS-Davis, PATH, and Caltrans in spearheading innovative mobility projects would offer productive solutions and avenues to future planning.

4.0 OTHER SIGNIFICANT REGIONAL PLAYERS

Although contact with other significant players in the region were not anticipated under this scoping grant, the following outlines the regional players that ITS-Davis/PATH/Caltrans staff should initiate contact if innovative pilot project funds are identified.

Sacramento Municipal Utility District (SMUD):
SMUD has long distinguished itself with innovative programs to promote electric cars and enhance clean energy sources. Conversations with Dwight MacCurdy, Project Manager for Electric Transportation within the Energy Services & Electric Transportation Department indicate an interest in linking housing developments with shared-use clean fueled vehicles.

Sacramento Area Council of Governments (SACOG):
SACOG, an association of 24 city and county governments, provides a forum for the study and resolution of regional issues. Its mission is "Delivering transportation projects, providing public information and serving as a dynamic forum for regional planning and collaboration in the greater Sacramento Metropolitan Area." SACOG has embarked on a three-year process to develop a major update to its long-range plan. This plan, the Metropolitan Transportation Plan 2025, will use the transportation plans of cities and counties as its primary building blocks, providing coordination between them and focusing on transportation strategies that link different locations in the region. SACOG has already completed travel surveys of the region and has origin and destination data that could be beneficial to innovative mobility pilot projects to better understand baseline regional travel patterns. In addition, SACOG has already developed the mechanisms and trust for regional decision-making regarding transport issues, and participation in this forum is ideal for introducing innovative mobility concepts.

California Air Resources Board (ARB):
ARB has primary responsibility for air quality in the State of California. Under this authority ARB has implemented a zero emission vehicle (ZEV) standard that requires automobile manufacturers to produce and a certain number of ZEVs within specified years and timeframes. Recognizing that there are many technologies that can reduce tailpipe air emissions but that do not have zero emissions, ARB has instituted a system of partial ZEV credits for advanced technology vehicles. Further recognizing that alternative modes and reduced automobile dependence also reduce air emissions, ARB has recently begun a process to give advanced technology vehicles placed in shared-use applications partial ZEV credits as well. This new shift in the ZEV regulation has sparked automobile industry interest in shared-use systems at a strategic time for the potential UC Davis campus expansion. ARB staff have also indicated a desire to work with ITS-Davis/PATH/Caltrans staff.

Yolo, Solano, Sacramento Counties:
While the initial focus of innovative mobility pilot projects would be on interactions between UC Davis and the City of Davis, no transport solution can occur without a broader regional perspective. For example, although the City of Davis is presumed to be the key player in Yolo County, other cities in the County may turn out to be important to students, staff and faculty at UC Davis. Woodland has a population 47,000, and West Sacramento has a population of 31,300.

Although beyond the scope of this initial grant, further investigations into growth plans, major developments and transport routes in Yolo, Solano, and Sacramento Counties are appropriate. Such an investigation should be limited initially to broad scoping and refined subsequently, if facts indicate project partnership interest within communities in these counties.

Developers:
Building developers could be key partners in innovative mobility pilot projects, if it is determined that a linkage between housing complexes and shared-use access to vehicles is appropriate. Although no formal discussions with developers have been initiated at this time, informal contacts indicate a desire for further discussions with ITS-Davis/PATH staff. Some developers are interested in producing housing with reduced environmental impacts and stronger community connections. UC Davis Student Housing maintains relationships with many local developers for off-campus housing and has expressed interest in working on innovative mobility pilot projects and helping to build relationships with progressive developers.

Yolo Carshare Organization (YoloCar):
YoloCar is a volunteer group of Davis and Yolo County citizens that are actively meeting and planning to launch a local carsharing organization. Meetings and discussions with this group have been productive. If they are successful in launching their carsharing organization, there may be productive opportunities to partner in a smart carsharing demonstration pilot project.

5.0 AUTOMOBILE MANUFACTURER CONTACTS

Numerous discussions have occurred between ITS-Davis/PATH staff and major automobile manufacturers. Since no arrangements have been formalized, it is not appropriate to name manufacturers. However, manufacturers have indicated an eagerness to work together on innovative mobility projects in the Davis/Sacramento region.

Some of the automobile manufacturers are interested in Davis/Sacramento pilot projects because they are looking for viable test locations for their advanced technology vehicles, such as fuel cells and electric drive vehicles. They are looking for high visibility and normal day-to-day usage for customer feedback and maintenance information. The benefits to the automakers, include: they could learn how to maximize customer satisfaction, gather real-world operation data that would enhance the next generation of

advanced technology vehicles and electronic/wireless technologies (telematics), and they may receive ZEV credits from ARB for strategic placement of their vehicles.

Other automakers are interested in innovative mobility pilot projects because they want to explore the idea of providing mobility as a business, rather then just manufacturing vehicles. While this represents a small faction of the automobile industry and yet a smaller faction within individual companies, the interest is growing and the potential for strong partnerships that would benefit the Davis region and the automobile manufacturers exists.

6.0 CONCLUSION

Developing innovative mobility pilot projects in Davis/Sacramento would require multiple partnerships with UC Davis, the City of Davis, other surrounding jurisdictions, industry, and citizen interests. This initial scoping study has revealed a high degree of interest in pilot projects and a willingness to participate from many individuals.

Innovative pilot projects could contribute significantly to the state of knowledge about the provision of mobility services, including consumer choices, business models, technology needs, and environmental and social impacts. Should funding be secured for innovative mobility projects in this region, next steps include:

1) Continuing to engage with the campus LRDP process, enhancing understanding of individual department needs and constraints, and gaining a clearer picture of the needs of students regarding transport on a daily basis.

2) Engaging the City of Davis City Council and the relevant departments.

3) Creating a long-term working group including campus students, staff and faculty, City of Davis participants, and other relevant parties.

4) Conducting a scoping of development plans and transport needs and constraints of surrounding counties and communities to determine if there are reasons to include such areas in pilot projects.

5) Pursuing serious discussions with the automobile industry and other technology providers to build a partnership for the pilot projects.

6) Introducing pilot project ideas to state and regional agencies and businesses, such as SACOG, CARB, SMUD, and local business associations.

Once the initial scope of several pilot projects is determined, all efforts should narrow to implementation of selected projects that would be launched in the coming years. Subsequent activity would be largely shaped by potential project participants.