ARIZONA DEPARTMENT OF TRANSPORTATION

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UNIVERSITY RESEARCH CENTER PHASE II

Final Report

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16. Abstract

The study team established that there is consensus that the quality of technical research currently being done at the universities in Arizona and at the Arizona Department of Transportation (ADOT) is generally of very high quality. The perception also exists that there is a need for more.

The majority of focus group participants felt that an Arizona Transportation Research Institute (ATRI) could help to coordinate policy development in transportation. While some opposition to this idea was expressed, the majority belief was that a consolidation of research could be accomplished and is a desirable goal.

If an ATRI is established it should be a broad based entity that consists of a consortium of the three state universities with strong pubic and private sector participation and oversight. The state and its political subdivisions, the universities and the private sector need to be represented on any institute's board of directors.

The ATRI would need to be funded in the long run by a permanent funding mechanism the includes allocations from the U.S. Department of Transportation, appropriations from the state's general fund through "decision packages" by the legislative appropriations process for the three state universities and private sector contributions.

Before making a final decision on whether to implement an ATRI, it is recommended that the originally planned phase 3 of the university-based research center project be initiated. Phase 3 entails the appointment of an interim director whose primary task during the 12 month span of his appointment will be to solicit private sector financial support for the prospective ATRI.

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METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	2.54	centimeters	cm
ft	feet	0.3048	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
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ft^2	square feet	0.0929	meters squared	m^2
yd^2	square yards	0.836	meters squared	m^2
mi^2	square miles	2.59	kilometers squared	km^2
ac	acres	0.395	hectares	ha
		MASS (weight)		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.0328	meters cubed	m^3
yd^3	cubic yards	0.765	meters cubed	m^3

Note: Volumes greater than 1000 L shall be shown in m^3.

		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
yd	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	millimeters squared	0.0016	square inches	in^2
m^2	meters squared	10.764	square feet	ft^2
yd^2	kilometers squared	0.39	square miles	mi^2
ha	hectares (10,000 m^2)	2.53	acres	ac
		MASS (weight)		
g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams (1000 kg)	1.103	short tons	T
		VOLUME		
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L	liters	0.264	gallons	gal
m^3	meters cubed	35.315	cubic feet	ft^3
m^3	meters cubed	1.308	cubic yards	yd^3

		TEMPERATURE (exact)		
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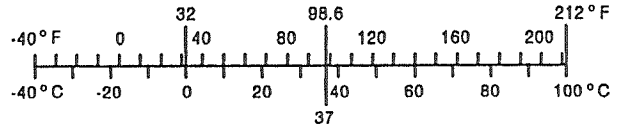
These factors conform to the requirement of FHWA Order 5190.1A

*SI is the symbol for the International System of Measurements



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EXECUTIVE SUMMARY

This study was commissioned by the Arizona Department of Transportation to determine the level of need and establish the blueprint for the creation of a university based transportation research center in Arizona.

The study team identified over 140 stakeholder groups in Arizona representing organizations, associations, corporations, government entities and educational institutions. The majority of these stakeholder groups were interviewed as participants in the study over a three-month period.

The study team established three types of research that are indigenous to transportation research: technical research, pubic policy development and public education. There is consensus that the quality of technical research currently being done at the universities in Arizona and at the Arizona Department of Transportation (ADOT) is generally of very high quality. The perception also exists that there is a need for more.

Public policy research is believed to be exceptionally weak. It is considered fragmented at best. There doesn't seem to be any integration of transportation policy research conducted by various entities. Furthermore the state is besieged by parochialism within its political subdivisions. It is therefore difficult to establish consistent priorities in transportation and even more difficult to get the public to support the initiatives on which some consistency is developed.

Public education is usually limited to convincing the electorate to vote for or against the ballot propositions on transportation that have been referred to the voters every couple of years. This is short-term education and does little to contribute to the public's long term understanding of the transportation issues and corresponding solutions that face the state.

There was a perception of a need for an Arizona Transportation Research Institute especially to coordinate policy development in transportation. While some resistance occurred, the belief that a consolidation of research could be accomplished was viewed as a necessary and desirable goal.

If a transportation research institute is created it should be a broad-based entity that consists of a consortium of the three state universities with strong pubic and private sector participation and oversight. The state and its political subdivisions, the universities and the private sector need to be represented on any institute's board of directors. A "blueprint" for a prospective ATRI is detailed in Appendix A of this report.

Three options for proceeding from this point were outlined:

- **"DO NOTHING":** Continue with the evolutionary development of ADOT's existing transportation research center as it works toward developing better relationships with the three in-state universities.

- **INITATE PHASE 3 OF THIS PROJECT:** As originally conceived, the "University-Based Research Center" project undertaken by the ADOT research center entailed three phases. With $100,000 in funding appropriated by the Arizona Legislature, phase 3 would entail the hiring of an interim director for a potential university-based transportation research center. This interim director would use the results of the phase 2 study, particularly the lists of contacts and stakeholders, to solicit private sector and other sources of financial support for the prospective research center.

- **IMPLEMENT A UNIVERSITY-BASED RESEARCH CENTER NOW:** The research from both phase 1 and phase 2 of this project indicates that the prospects for generating much private sector financial support for a new university-based transportation research center are not particularly promising. It seems highly likely that if there is to be a university-based transportation research center it will have to have a substantial financial commitment from the Arizona Legislature. Perhaps this issue should be confronted now rather than being postponed.

RECOMMENDATION

It is our considered judgment that proceeding with phase 3 of this project would be the best course of action for the following reasons:

- It has the virtue of fulfilling the original intent under which this project was launched.

- The prospect for generating private sector financial support may be greater if the potential contributors know that the fate of the enterprise depends upon their generosity.

- The private sector stakeholders who express strong opinions on how research ought to be conducted should be given a meaningful opportunity to make more than a verbal contribution to the outcome.

- The relatively low cost of initiating phase 3 of this project makes it a worthwhile investment.

- While phase 3 is underway, ADOT can continue its initiative to increase the university community's participation in its current research program.

- A more meaningful exploration of the possibility for establishing a financially self-sufficient prospective Arizona Transportation Research Institute as identified in the "blueprint" can be conducted.

INTRODUCTION

The problems of addressing the state's needs in the area of transportation in Arizona are many and diverse. Phase I of the ADOT approach to the university research center question identified institutions in other states and reviewed their structure and funding as well as relationship models, research improvements and educational benefits in those other states.

Based on that research an understanding developed that these centers provide a benefit to those states and their policy makers. It was a natural next step for Arizona to determine the potential for the development of such a center. This phase of the study was therefore commissioned to take that next step in this process.

There are three basic types of transportation research that are used in establishing solutions to transportation problems: technical, public policy and public education.

Within the policy area there are land use issues as well as hard transportation issues we face in Arizona. Furthermore there is both real and perceived parochial self-interest in existence among political subdivisions. This seems to create roadblocks in achieving results in policy development. This same parochialism seems to exist among the states' universities which may in and of themselves create roadblocks to cooperative research.

This project was designed to identify the perceived view of transportation research in Arizona and then determine the perceived need for creation of a transportation research center. Lastly, the study was expected to develop a blueprint for the creation of the center.

This report includes the results, findings and recommendations of our research. This report includes the study design with detailed appendices of the analysis to which are referred. The findings of the study have been delineated to provide support for the recommended blueprint fopr the structure of a prospective new Arizona Transportation Research Institute (ATRI). Included is an organizational chart and complete structural description. They could be easily converted into a charter and by-laws by the initial board of directors. The recommendations include the procedure for initiating the ATRI.

PART I. STUDY DESIGN

The research team started with the simple concept: an Arizona Transportation Research Institute would have a better chance of survival and support if it was created with the input of those groups and organizations both within and outside of the government who held a stake in the ATRI's creation. This is what guided the development of our study design.

The first task therefore was to develop a stakeholder matrix with a significant listing of stakeholder groups. The team broke down the stakeholder delineation into four different groups: government; higher education; trade and other membership associations; and, corporations.

The government stakeholder matrix was designed to include state government and its political subdivisions. At the state level the team included the Department of Transportation (ADOT), Department of Commerce (DOC), Department of Environmental Quality (DEQ) as well as representatives from the legislative branch.

The political subdivisions included representatives from the different councils of governments (COG's) because of their specific and deep involvement in transportation planning based on federal law. In addition the team also wanted to include representatives from specific governmental entities such as city and county governments. The team also decided to include in the matrix quasi trade associations of government entities such as the League of Arizona Cities and Towns, the Arizona Association of Counties, and the Maricopa Regional Transportation Planning Association.

The higher education stakeholder matrix included five sub groups: each of the three universities; the state's community colleges and the private post secondary institutions. The team then took each of the universities and delineated sub stakeholders within each grouping. For each university the team identified specific departments or areas that the team felt might be conducive to participating or having an interest in the ATRI.

The team was contacted by a group consisting of faculty members from the three state universities who indicated an interest in the project and had already been engaged in working on a consortium for transportation research. This group included representatives of civil engineering departments as well as the architecture schools and the business colleges. This group helped the team to identify more sub stakeholders within the university system.

The team was interested in including university stakeholders in two specific areas: the universities' administrations and the development arms of the universities. The team also enumerated other potential university stakeholders including the business colleges, the colleges of public policy and the satellite colleges at ASU West, ASU East and Arizona International in Pima County. The team was particularly interested in ASU East because of its existing aeronautical focus.

With regard to trade and other membership associations the team tracked in a similar manner to the aforementioned stakeholder groups. For example, the team identified trade associations that represent the corporate entities included on the corporate matrix. The team also recognized that trade associations might provide broader viewpoints representing the aggregate of the businesses that had been identified. The stakeholder matrices were assembled by the above outlined groupings. The matrices are included in Appendix B.

The team had a more diverse matrix among corporate Arizona. The team defined those corporations that had a direct relationship with the transportation field. Specifically the team sought to include trucking companies and airlines as well as auto test tracks.

For the remainder of corporate Arizona the team tried to include representative corporate entities from the different major fields. The team looked at the corporate fields as users of the transportation systems in the state, as taxpayers in the state, as entities that might participate in funding a transportation institute, and as employers.

Following the completion of the stakeholder matrices the team next conducted three stakeholder focus groups. The purpose was to sort out the perceived issues related to transportation and to the concept of a University Based Transportation Research Center.

From the stakeholder matrices the team prepared a statistically valid stratified random listing of the 140 stakeholder groups that had been identified. The focus group participants were recruited from this list. One group consisted of only members of the universities' communities. The other two groups consisted of a heterogeneous grouping of the remaining stakeholder groups.

Lead by a professional facilitator, the groups discussed issues about the purpose of a center, concepts for structuring a center (including possible staffing and organizational structure) and the funding opportunities for a center. The results of the focus groups enabled the creation of outlines to help facilitate discussions with specific stakeholders and stakeholder groups.

During the sessions, the focus groups pointed to some specific items that needed to be included in the discussion outline. General comments also helped to set the tone for meetings. It was determined that this would help people to identify the what and why of the study before getting into specific discussions about a proposed center.

Also of importance was to identify how the participants felt about the state of transportation research that was currently being undertaken. The focus groups discussed their understanding of what was being undertaken at the present time and raised related questions. Of important interest with regard to the state of transportation research was the perception of what research needed to be done and what venue or entity was the best equipped to conduct that research.

From that point the focus groups discussed the concepts of research institutes and centers spending time on structure and governance. The participants also identified certain parameters that could be employed in defining what the center should have as its charge. They also discussed the questions that surround the funding of such a center. The focus group reports in their entirety are included in Appendix D.

The team then began the interview portion of the study. Commencing at the beginning of July and following through the beginning of October, the research team spent 338 man-hours in conducting interviews and recording the data. The team interviewed 84 stakeholder groups comprising 168 different individuals. For the initial sets of interviews the team used the following interview outlines:

1. What kinds of issues are facing Arizona with regard to transportation?

2. Solving problems requires good research in addressing them. What is your perception of the quality of transportation research that is done in Arizona about these problems?

3. What kinds of research do you think ought to be conducted when addressing transportation issues?

4. What entities should be conducting that research?

5. As you know from the fact sheet, this study is working towards the possible creation of a university based transportation research center. What do you think about that proposal?

6. If such a center was to be created what different ways do you think should be used to fund the center?

7. How would you fund a transportation research center?

8. How would you structure a university based transportation research center?

9. Who should serve on a board of directors?

10. How should directors be selected?

11. Given some specific options how well do you think the following structures would be run? Would a university based transportation research center be better run:

- Under one university
- Under a consortium of the state universities
- By one university on contract to the state
- By a private sector foundation without ties to any university
- By a private sector foundation with a contract with one or more universities
- Private sector foundation with contract to one university

12. What should the ratio of university people to private sector to other government officials be?

13. What about the creation of advisory committees?

14. How do you think they would work?

15. What types of committees would you create?

16. What kind of criteria should be used to determine the types of research projects to be undertaken?

17. How would the selection of graduate and undergraduate fellowships be made?

- Would you have a private sector advisory committee?
- Would you have an academic advisory committee?
- Would you include government officials in your advisory committee?
- Would you accept research projects from the state; would you accept research projects from the legislature?
- Would you accept research projects from the governor's office?
- Would you accept research projects from the private sector?
- Who else should be recommending research projects?

18. What other issues that the team has not covered here do you think should be reviewed while conducting this study?

19. Finally do you have any other thoughts or ideas that you think the study team ought to be aware of?

20. I want to thank you all for participating in this interview. If you have any additional thoughts or ideas at a later time please forward them to us.

Following the first few weeks of interviews, the team revised the interview outline to reflect some of the findings that were coming from the initial interviews. The team also added an organizational chart that was revised later in the process. These organizational charts are included in findings section of this report. The new interview outline included the following:

1. What kinds of issues are facing Arizona with regard to transportation?

2. What is your perception of the quality of transportation research that is done in Arizona about these problems?

3. What kinds of research do you think ought to be conducted when addressing transportation issues?

4. What entities should be conducting that research?

5. As you know from the fact sheet this study is working towards the possible creation of a university based transportation research center. What do you think about that proposal?

6. How would you structure a university based transportation research center?

7. Should a center be run by:

   - Under one university
   - Under a consortium of the state universities
   - By one university on contract to the state
   - By a private sector foundation without ties to any university
   - By a private sector foundation with a contract with one or more universities
   - Private sector foundation with contract to one university

8. I have here a draft functional organizational model. What are your first impressions of this model?

9. The concept of this model is to have the four independent committees operating under the Board of Directors. This maintains the independence of the research effort. Could you comment on this aspect of the model?

   - How should research projects or subjects be identified or initiated?
   - How should the actual conduct of the research be selected and undertaken?
   - How should the evaluation of the completed research be handled?
   - How should the completed and evaluated research be conveyed to the public for implementation?

10. Note that there is public input built into the committee structure and operation. Could you comment on this aspect of the model?

11. Who should serve on a board of directors?

12. How should directors be selected?

13. Should there be some kind of automatic selection process to limit the political influence on the center?

14. Should there be limitations on how long a board member should be allowed to serve?

15. If such a center was to be created what different ways do you think should be used to fund the center?

16. Are there any specific combinations of federal, state and private sources you might use in funding a center?

17. How would you fund a transportation research center?

18. What kind of criterion should be used to determine the types of research projects to be undertaken?

19. What other issues that the team has not covered here do you think should be reviewed while conducting this study?

20. Finally do you have any other thoughts or ideas that you think the study team ought to be aware of?

21. I want to thank you all for participating in this interview. If you have any additional thoughts or ideas at a later time please forward them to us.

Once the interview process was completed, the team assembled the notes from the 84 different interviews and developed summaries of the interviews. (The list of those organizations and individuals that were interviewed is included in Appendix E.) Those summaries comprise the bulk of the research findings.

Following the completion of the interviews, the team undertook its final focus group session. The purpose of this focus group was to evaluate two things. The first purpose was to create a mission statement. Many participants in the previous focus groups had expressed a concern that the study did not delineate a mission statement.

The second purpose was to assemble a heterogeneous group of participants to freely discuss what they had been interviewed about in their homogeneous groups.

Once again the focus group participants were selected from a scientifically drawn, stratified random sample of all participants who had actually been interviewed about the center. Furthermore we again used the same professional facilitator who had conducted the initial three focus groups. This added continuity to the methodology employed and is so reflected in the focus group narratives (see Appendix D).

PART II. RESEARCH FINDINGS

ISSUES

There is consistency among stakeholder groups about the issues that confront the state of Arizona with regard to transportation. There are variations on these issues due to perspective, geographical location and economic positioning, but essentially the leadership of Arizona is aware of what the key issues are. To some extent, however, they disagree on how these issues are to be addressed.

There is a widespread belief that Arizona has no statewide strategic plan for handling transportation throughout the state. Most of the stakeholders interviewed went as far as to suggest that there is no strategic plan to handle transportation within the smaller geographical areas such as Maricopa or Pima counties. This is not to say that there is not a plan for construction of freeways. There is. This is not to say that there are not plans for distribution of funds from the federal government or from the highway user revenue funds (HURF) or other tax revenues. There are.

What most of the participants suggest is that there is no strategic plan for creation of an integrated system of transportation that meets present transportation needs or will meet the needs of Arizona in the future. They further suggest that there is no one entity or even group of entities that are equipped to handle that kind of overall strategic planning in transportation.

Likewise most participants suggest that there is not the political will in the state to address a comprehensive transportation strategic plan. They suggest a need for transportation visionaries and leadership that can create a balanced plan for the future of transportation in Arizona.

Participants further suggest that the education of the public on transportation issues is very poor. This is not to say that the public has not been convinced to support or oppose certain transportation initiatives that have appeared on the ballots of the political subdivisions of the state. Convincing people to vote yes or no on a ballot proposition and educating the public on transportation needs and solutions are vastly different things. Hence, there is little public acceptance of the reality of the transportation situation currently or the need for a comprehensive plan. Part of that stems from a basic distrust of government, or more specifically, of the office holders in Arizona's political institutions.

Also of note, before delineating the specific issues, is an interesting finding that arose in several discussions. Several participants suggested that we should be researching how to bring our society into a "Jetson's lifestyle." Referring to the futuristic cartoon series that ran some years ago, several participants suggested that we are not spending enough time or resources in researching advanced types of transportation that are unknown currently, but that will be needed in the not so distant future.

With that said, eight issues were identified as the most significant in defining transportation in Arizona. Not in any particular order of importance, they are:

Land Use Planning

There is little question that growth in and of itself is a critical issue to Arizona. There is perceived to be little planning and that which is planned is not done effectively. The growth issue comes in both development terms and population. There is widespread feeling that it is not being adequately addressed.

Likewise there is an acute understanding that land use planning from the past has contributed mightily to the state's current situation. They point to two specific things: First land use planners since the early 1960's have disdained multiple use zoning. Arizona tends to have both county and municipal plans that are based on the concept that single use zoning set up in checkerboard style is the way to grow a community. Secondly, land use planners during the same time period resisted allowance for any significant amounts of high-density development. When you combine low densities and single use zoning you essentially "flatten the pancake" and disperse the population further than it might otherwise be spread.

The combination of these two preferences among planners may result in some inefficiencies when it comes to moving people and products. People moving to Arizona from high-density places such as New York, Chicago and other major metropolitan areas, seeking lower density lifestyles has likely contributed to the land use planning directions identified above. But when planning and creating municipal, county wide and regional plans, transportation exigencies have often not been included. We have done little or nothing in land use plans to provide for transportation other than to require consideration for vehicular transportation. For example, most cities have strict requirements for the number of parking spaces that a development must provide.

Some suggest air quality considerations be included in future land use plans. Some cities require environmental impact studies to be included with zoning requests. However, no political subdivision of which we are aware is including transportation of people and products as consideration for zoning filings or for changes in their general land use plans.

Freeway Transportation and Construction

There is little diversity among stakeholders on the relative importance of constructing our freeways and roadways. Even among staunch supporters of multi-modal transportation, there is a belief that freeway plans must be completely implemented and accelerated if at all possible.

Where the diversity occurs is in whether there should be any alternatives other than freeways and road construction. In other words, there is strong sentiment among some that we should not spend energy, time and resources on alternative forms of transportation.

Also of interest was the suggestion that different jurisdictions are working at cross-purposes in establishing freeway and roadway construction plans. Frequently cited are parochial battles between jurisdictions for the determination of priorities. There was the Pima versus Maricopa issue, the urban versus rural and several other mostly geographically based conflicts. Specifically within Maricopa County the east versus west clash was frequently brought up. There were also suggestions that the Governor's appointed, regionally representative State Transportation Board was not identifying priorities correctly or effectively and allocating too much money for certain areas to the detriment of others.

When probed most participants agreed that these differences are fed by research and planning that is being conducted locally and without concern for the comprehensive needs of the state. This finding is a key element for support of a centralized transportation research center. There appears to be a fervent desire for an unbiased, neutral center where conflicting plans can be submitted. Most jurisdictions seem to concur with this desire. However, these same jurisdictions are very reluctant to yield their own authority to a centralized agency.

Public Transportation

One participant asserted to us early on that over one third of all adult Arizona residents do not possess a valid driver's license. While this statistic was never confirmed, the suggestion was that these people need to have transportation to get to their place of work or their schools and for a host of other reasons.

The verbalized opinion that there is a need for multi-modal transportation systems is widespread. More participants believe in multi-modalism than in having freeways as our sole mode of conveyance. The need for the multi-modal approach was suggested more by corporate employers than any other group. One bank executive suggested that getting their employees to work in multiple locations was their single most difficult transportation problem.

Just what kind of mass transit would be effective or efficient is a matter greatly disputed; nevertheless the perceived need is definitely there. Furthermore, the need for a place to research the opportunities for exploring possible mass transit options is deemed important.

Likewise, the public education issue becomes crucial when mass transit and multi-modal transportation planning is discussed. Once again the previously mentioned concept of convincing people to vote for or against a transportation ballot proposition versus true public education comes up. The issue of mass transit needs remains highly controversial. There is little agreement on what should constitute the "educational curriculum" on this issue. Furthermore, education will contain many hard lessons and decidedly difficult choices.

No public transit system in the United States earns enough revenue from passengers to cover its costs. All require substantial taxpayer subsidies to operate. Therefore, transit education inevitably entails questions of whether or how much taxpayer assistance should be provided. The study team is neither advocating for public transit nor arguing for public funding or subsidy of

transit plans. The suggestion is that the research shows this issue needs to be fleshed out and explained to the public as clearly and as succinctly as is possible.

Air Transportation

Air transportation considerations in terms of research were mentioned more than the team anticipated. Included in the discussions was the concept of a super jetport serving both the Phoenix and Tucson metropolitan regions as well as the possible need for expanded air service to the rural communities of the state.

Among the study participants there was significant support for a regional jetport. Many participants mentioned it as an integral part of remaining competitive in economic development. They cite the Pacific Rim's needs for transportation of goods and products into the United States as being important to our future. Participants see the West Coast as being incapable of sustaining the type of air traffic growth that will continue in the near future. Participants therefore see Arizona in a position to attract that air traffic, but in need of a facility that is capable of handling that air traffic. Participants view working on the issues that surround a regional jetport as important to the work of a research center.

All of the rural participants in the study brought up air transportation as an area that they thought has not received enough attention by transportation planners. Rural participants perceived their local airports lacking in the necessary amenities to be effective in handling air traffic. While they understood the economic constraints of air transport to small rural locations, they still felt that researching the relationships between air transportation and the transportation needs of the state in general were essential.

Rail Transportation

The team identified that a significant base of support among the study participants still exists for inclusion of rail transportation as an integral aspect of an overall transportation plan. Rail transportation is still considered to be a priority among many Arizonans.

Just as many people, however, object to as support the concept of rail as being a viable method of transportation for the state. Some identify its extreme costs as reason to oppose. Some point to lack of use and general decline as reason not to continue to promote it. Regardless of position, however, rail travel evokes passion and polarized the participants more than any other single issue.

One of the suggestions that was proposed several times was the concept of a high speed rail system between highly populated areas. A Phoenix to Tucson “bullet” train has been suggested frequently in public policy discussions. One problem with a high speed Tucson to Phoenix line would be the inevitable question of what passengers would do for transportation once they get to their destination city. Without convenient local ground transportation, car-less rail passengers would face daunting mobility problems once they reached their destination.

Consequently, the prospects for intercity rail and local transit are linked. Investment in intercity rail will not reach its full potential to attract riders without additional investment in local transit systems or other means of conveying rail passengers to their destinations once they disembark the trains at the rail depots.

Furthermore, discussion of rail also centers on the high cost of rail construction and of track and car maintenance. Opponents point to a recent study (unsubstantiated by the team) that indicated a line between Phoenix and Tucson could cost as much as $650 million to construct, which does not include the cost of maintenance and, of course, of the actual trains and connectors.

The aforementioned findings once again point to how inextricably tied transportation issues are to each other.

Air Quality

Although air quality is of grave significance it is probably the least understood issue. This appears to be due to the technical nature of the issue and the heavy participation the federal government plays in the ultimate resolution of the issue. Most Arizonans do understand, however, that if we do not comply with Environmental Protection Agency (EPA) guidelines that the likely impact will be sanctions (for example, loss of federal aid for highways or limits on new construction) that would have severe effects on our economy and productivity which would have ripple effects throughout the state.

The team found most participants frustrated by the air quality issue. They point to conflicting information that comes from different jurisdictions. For example, in 1997 the legislative deliberations over the use of alternative fuels for automobiles during the summer ozone season produced several models showing significantly different results for various alternative fuels. No one was quite sure whose numbers to believe. Unfortunately, inconclusive or conflicting findings are a frequent outcome in scientific research. Sometimes consensus among scientists takes years to achieve. Further, even when the facts are known to experts, policy makers and the general public may still be operating under false premises. For example, the general public and the media appear to be under the impression that the Phoenix region's air quality has been getting worse when, in fact, the quantity of one key pollutant—carbon monoxide—has declined substantially over the last 30 years despite huge increases in traffic.

The air quality issue likewise is linked to most of the other issues that were raised by participants. Certainly air quality is linked to growth and land use planning; to freeway and highway construction and use; and linked to mass transit. In fact the air quality issue was most cited in terms of its connection to the need for mass transit alternatives, even though the actual impact of any likely transit expansion on air pollution is very small (about 1% or 2%). Air quality is an issue subject to conflicting trends. On the one hand, the Phoenix region just attained two consecutive years without a violation of EPA standards for carbon monoxide levels. Newer cars are less polluting than the older cars they replace. On the other hand, more cars are

continually being added to the traffic stream and it seems unlikely that Arizona will ever meet the EPA standards for particulates due to the large quantities of dust inherent in a desert environment.

Interstate and International Connectivity

The North American Free Trade Agreement gave birth to another issue of perceived importance among Arizonans. It served to highlight the connectivity relationship between Arizona and the other states in our region and between Arizona and our CANAMEX neighbors, Mexico and Canada. Here the competition between transportation corridors throughout the United States is a critical issue.

The relationship between connectivity and the funding issue also has great significance. For example, one of the most significant CANAMEX issues has to do with the construction of a bridge over the Colorado River near Hoover Dam. The cost of constructing the bridge and approaches exceeds $180 million when you include both sides of the bridge. The state is unwilling to fund it by itself given the pressures of funding needs on other existing transportation plans. The Director of the Arizona Department of Transportation recently stated that the overall shortfall for transportation construction in Arizona is roughly $9 billion. With this large quantity of competing needs finding $180 million for a bridge over the Hoover Dam will be difficult.

Many study participants would justify spending $180 million on this bridge by explaining the impact of NAFTA and the CANAMEX Corridor on the economy of the state. Interstate and international transportation is growing in its importance to the economic structure of Arizona. Therefore, many suggest that such an expenditure would be a small price to pay when compared to the cost of traffic being rerouted around Arizona to avoid having to cross the Hoover Dam in its current configuration.

The importance of interstate and international transportation configurations will continue to grow and their impact on the state must be assessed. Likewise, how we integrate that into the overall transportation planning for Arizona will be important to our future.

Transportation Funding

More than one study participant responded to the original questions of what the most important issue facing the state in transportation is with one word—money—but they did so from a variety of contexts.

One study participant suggested that Arizona is one of the highest taxed states in terms of transportation related taxes, but Arizona clearly does not have the highest rated transportation system of roads. Hence the argument for poor planning and poor implementation is suggested.

Other participants suggested that there is not enough money to take care of the transportation needs of the state. When you consider that statement against the backdrop of the

previously mentioned ADOT Director's comment of having a $9 billion shortfall, it is easy to understand why funding is a critical concern. When we consider that funding involves taxes, the foundation for a very contentious issue is apparent.

Transportation funding is derived from taxes that do not automatically grow with inflation. Consequently, revenues do not grow as rapidly as the costs of construction per mile of highway. The gas tax is a flat fee per gallon. While it does grow based on fuel consumption, the improvements in fuel efficiency achieved by vehicles mean that as newer vehicles replace older vehicles the yield per vehicle mile from this tax decreases. An additional limitation is that a fixed cents-per-gallon tax does not keep up with inflation. And since gasoline has been one of a few items that has fallen in cost over the last 15 years, linking the tax to the price of gasoline wouldn't have provided any offset to the inflation in construction costs over that timeframe.

Unaware of the relative price decline of gasoline, some study participants suggested that we enhance our funding by making the sale of gasoline subject to the state sales tax. They suggested we apply the 5% state sales tax right on the top of the price of gasoline. It is a very controversial idea, however, and one which may be difficult to sell to voters or legislators.

The United States Congress recently passed the TEA 21 transportation funding legislation. While this increased Arizona's allocation from 85 cents on the dollar sent to Washington to 91 cents, we are still a donor state and as such we have nine cents of our federal transportation taxes spent on roads in other states.

The distribution by the Arizona Transportation Board of TEA 21 funds within the state is also a controversial issue. A complaint that was frequently articulated by the participants was that the Board's geographical make up does not accurately reflect the population distribution of the state. Purportedly, this leads to disproportionately large distribution of those moneys to rural areas. Some see those rural areas as clearly not the deserving the same level of funding as do the urban areas. On the other hand, the purpose of roads is to serve traffic. Rural routes tend to have far more traffic than would be expected from observing the populations of the surrounding areas. So, this controversy clearly has two sides to it.

Other Issues

There are other issues that have been raised in these interviews. More elaborate discussions of the aforementioned "Jetson's lifestyle" concept have occurred. The concept of alternative-fuel automobiles came up from time to time. But it is difficult when recapping the notes from the interviews to find issues that fall outside of the eight that have been enumerated here.

Though it has been mentioned before, it is worth mentioning again that these issues have a strong inter-correlation. It is rare that one of these issues can be discussed without discussing some of the others.

PERCEPTIONS ON THE QUALITY OF RESEARCH CURRENTLY BEING CONDUCTED

There are three basic types of research in the area of transportation. The first is technical research that deals with materials and basic and applied science. It includes research on materials utilized in the construction of roads and freeways, as well as the design research and other non-policy related, position-neutral research.

The second type of research is policy or planning research. This is the type of research that is undertaken to provide the information that can help fashion policy and make policy related decisions with regard to transportation. Policy research includes seeking data and/or making calculations that can help determine the prioritization of transportation undertakings. Such things as research that could affect a schedule of when construction will take place and where to place roads and freeways are included in this category. Also included in this type of research are the land use planning questions that require research applications.

The final type of research is public education on transportation. Here, as referenced before, the issue is not about the efforts to influence voters on which way to vote on any particular ballot proposition. Rather the issue is about true public education. This is the expansion of the public's actual knowledge about issues and the implications of those issues on their day to day lives.

It is important to make a strong clarification about this section. The participants' views were primarily perceptions on the quality of research in the area of research that is currently being conducted. Most acknowledged that they were not sure about the quality of research. When probed they questioned their own perceptions.

If good quality research is currently being conducted in the state of Arizona, few are doing much, if anything, to publicize that fact. Most participants in the study admitted that they were not aware of much transportation research. Granted that after the aforementioned probing they were able to come up with instances for which they were familiar, but by and large they were unaware of the quality of research currently being undertaken.

More significantly, those participants who did have a perception of the quality of transportation research used words like, "fragmented", "virtually zero", "fair at best", "mediocre" and "poor" to describe their views of the quality of research. But it is important to dive a little deeper into the views expressed in each of the sub groups to better understand where groups stand on this issue.

Several participants who were aware of the quality of research in the technical area gave extremely high marks to the basic and applied technical research being conducted at the state's universities. There were selective pockets of excellence identified at the universities with the University of Arizona being highlighted most often.

Other positive marks on technical research went to ADOT, but in a limited fashion. Participants who were aware of the quality of research by ADOT suggested that ADOT did some good work, but was limited in the depth of its research abilities. A few participants cited the local jurisdictions as having good technical capabilities as well.

In the area of planning and policy research, the marks were almost uniformly low. The perception is that there is a tremendous gap between the research that is being conducted and the ability of policy makers to move that research to the implementation phase. There were also significant claims that policy research done in the political subdivisions is much too politically motivated and therefore had intrinsic biases that can not be overcome. Moreover, the biases questioned the validity of the results.

Some grudging acknowledgment of the quality was evident but was usually followed by complaints that the research was not part of a larger strategy. When probed, there seemed to be a sense that policy research was done in a more reactive mode rather than long term proactive policy development.

But when it came to public education research in the area of transportation there was an almost resentful uniform opinion that none was being conducted. In fact there is a high level of cynicism about this subject. Most participants suggested that the government really did not want to educate the public. Rather it was felt that the government would rather come up with proposals, slap them on the ballot with the support of the business community and convince the people to go along. But they all agreed, almost uniformly again, that there was a deep need for public dialogue, public efficacy and public education about the transportation needs and proposed solutions.

THE KINDS OF RESEARCH WE SHOULD BE DOING IN TRANSPORTATION

In their 1980 book, *The Third Wave*, Alvin and Heidi Toffler identified the three great waves of human history. From the beginning of civilization until the early 19th century we experienced the agricultural wave. From about 1800 to just after World War II we experienced the industrial wave. Now we are in a new third wave of human history. It is a wave of history that will change all of the accepted mores of second wave society. It is an information age. It requires new benchmarking research and new assumptions. It requires research that makes a large difference in the way we identify transportation issues. It requires a broad-based look at a wide array of issues and circumstances.

In determining the types of research that should be done it is instructive to take the Toffler's views into consideration. A true dichotomy of opinion exists on whether the research we undertake should be so called "real time" research or should be heavily laden with long term planning and futuristic modeling. Some participants look at long term alternative types of transportation. The so-called "Jetson's lifestyle" mentioned in the Issues section review received reference from several participants.

Love it or hate it, many study participants felt that the concepts embodied in rapid transit needed to be considered and researched. The cost to benefits ratios vary and need serious review. The new ideas in moving large numbers of people in an area of huge sprawl are currently limited and need expanded attention.

But just as much as the debate between long term and real time research is the debate in the area of growth and development. There is an acknowledgment of the changing demographics of our society and the need to understand the short and long-term implications of these changes. More narrowly defined concepts such as zoning density studies and capacity issues were raised frequently during the interviews. The very basis of Arizona's land use planning assumptions since World War II are being challenged. The need to understand how they should and would change in the future is high on people's minds.

Also under serious consideration are the relationships of alternative working opportunities. Ideas such as flextime and home-office work arise, but there is a lot of insecurity about the implications of what moving to these alternatives would mean to productivity, to individuals, and to relationships among workers.

Other concepts such as incentives for leaving cars at home and seeking other methods of transportation were mentioned. Understanding where people live now in relation to their employment and projecting these relationships into the future, given changes in the environment and demographics, are becoming priorities. In short, research is necessary to tell us what kinds of transportation through what kinds of vehicles—mobile and stationary—would work with population growth, to support an ever-changing economy.

Likewise, we are faced with research needs in the area of regional and global considerations. Trade with Mexico and Canada and the implications of NAFTA and the emerging CANAMEX corridor need thorough review and explanation. They also need long term planning and identification of short term needs. Ideas such as the regional jetport to facilitate ever-increasing trade and relations with the Pacific Rim were raised frequently.

There were some rather interesting special interest issues that came up throughout the interviews. Most interesting were the findings in agriculture. Those participants involved in agriculture expressed alarm at the needs for transporting cattle and produce. Cattle cannot be transported by air because of the potential fines that airlines can be subjected to, but air travel would be an effective and efficient way to move cattle. Unfortunately, even if the airlines were able to carry cattle there are few, if any, facilities in Arizona to handle cattle being transported by air. And what about those agricultural inspection stations at the borders? What are the implications for expansion or elimination of them? These were also of concern to agricultural interests.

Some participants say that all the research has been done but has never been implemented. Others point out that we have not even begun to scratch the surface in these areas. Regardless of the viewpoint, the amount of available subjects that require both short range and

long term planning, public education and technical review are almost unlimited. There may be a need as one participant suggested for a statewide, broad based, all encompassing transportation think tank.

WHAT ENTITIES SHOULD CONDUCT RESEARCH

Several years ago it was suggested that the number of work force development programs were out of control. Too many organizations and government entities ran programs that obtained and expended money. There seemed to be massive duplication and significant waste. Furthermore, no one agency seemed to know what the others were doing. The Departments of Commerce and Economic Security and the Community Colleges each managed their own programs and addressed their own perceived needs.

Governor Symington appointed a task force to try to get a handle on and unify these different work force entities. The Morrison Institute was commissioned to study the issue, identify the conflicts and suggest a resolution. The result was a more centralized repository for the funds and a dissemination point for the utilization of the funds based on coordinated needs assessments. Transportation research finds itself in the same position today that work force development found itself in just a few years ago. The similarities are striking.

Whatever entity conducts this needed research is going to have to be as independent and unbiased as possible. These two characteristics were mentioned repeatedly and passionately by the participants. Ideally, this entity should be as unbiased and independent group as possible. This might permit this entity to sift through all the advocacy groups and while being less tainted by personal agendas.

By consolidating research and enabling it to cut across disciplines, access to broad informational opportunities might be facilitated. Consolidation could do away with much of the perceived political distrust. In addition, a planned and systematic way to educate the public on transportation research needs and findings is needed.

Another major finding was the suggestion that there must be a buffer between the customer and the researcher. This is critical. The researcher needs to be free from political pressures to be completely objective. This may be one of the most significant points the team uncovered. The downside of separating the researcher from the customer is that the research ends up going off on a tangent that fails to fulfill the customers' needs. Independent academic research may be less buffeted by the struggles of among and within various government and private entities, but it may also be less relevant as a result.

High on the list of where to place the research entity was the universities in Arizona. Furthermore, it was also suggested that the universities should be teamed with the private sector to maximize the tools available to it. The universities are perceived, not surprisingly, as being oriented to academic styles of research. In addition, the suggestion came that this research entity could be viewed as a "four legged stool" including the universities, the state, the political

subdivisions and the private sector. The synergy of these institutions working in some collaborative manner was perceived to be the best possible arrangement for transportation research.

INITIAL THOUGHTS ON THE PROPOSAL FOR THE CREATION OF A UNIVERSITY BASED TRANSPORTATION RESEARCH CENTER

The idea of creating a university based transportation research center met with broad-based approval for a variety of reasons. Certainly there were some who disputed the need for such a center citing duplication and biases for their reasons. But they were clearly in the minority. The concept has support among the majority of those who were selected for participation in the study.

Most people see the current transportation policy research system as fraught with parochialism, biases and lack of a cooperative spirit. There is rarely a consensus developed on anything. Most communities maneuver for their own interests and do not care about the others unless there is in a *quid pro quo* swap of special interest achievements. Lots of research needs to be done, but for best results it requires objectivity.

Participants observed the Arizona community to be limited by its inability or unwillingness to look at the transportation system holistically. There is little desire to look at things on a global basis. There are many in the private sector who would like to facilitate this kind of holistic approach and there are those in the university communities who see the opportunity to achieve a consensus. But they sense being defeated by the parochialism of the system.

The creation of a research center brings some hope that it will draw its authority from a consensus. Certainly, the establishment of such a center would require, if not consensus, at least agreement among those organizations and agencies who would provide the necessary funding. The use of the academic world implies objectivity and advancement. This is especially true if a consortium of university interests is created to engage in this center. Combining this with a balanced participation from a wide array of private sector interests might result in the broad-based consensus desired by the majority of the focus group participants.

The ultimate success of the center would be determined by the structure and funding of the center and by the ultimate "buy in" of the different interests who have experienced parochialism and conflict in the past.

HOW TO STRUCTURE A CENTER

The most consistent recommendation from participants for structuring a center was that all interests must in some way be represented in the center. The consensus points to the universities as the best place to get the research done, but there must be oversight by and perhaps

participation from the private sector. Furthermore, most suggested that the best way to get the universities involved is through a consortium of the three state universities.

Some did suggest that the most efficient opportunity for running a research center would be to have the center within one university with that school's administration running it. If the center is to be run as a consortium then it could be run in several different forms. Some participants suggested that a center should be run by an inclusive board not dominated by any one entity. A larger group of participants offered that the governing body should be weighted towards private interests representing users, taxpayers and large employers.

There was a smaller group of participants that preferred to have the whole center run as a private sector type foundation, but there was significant doubt that private sector interests would be willing to fund the center. This is discussed further in the funding section of this report.

Advantages of the university consortium emerged in the discussions with participants from the three universities. It was found in those discussions that there is more cooperative research going on between and among the universities than is commonly believed. Frankly, the perceived parochialism between campuses does not exist to the level that many presume. There are significant cooperative ventures already in existence and these should be utilized in running a center.

The combination of university operation and private sector oversight seemed to be a comfortable circumstance for most of the participants. It followed the idea of a balanced approach. As one participant suggested, this combination would create the opportunity for a university setting founded in real world circumstances.

Most participants also pointed to the need for an effective executive director in order for the center to succeed. They described the kind of executive director as a "big picture" person, not necessarily an academic type, and probably someone with significant private sector management and public policy experience.

The other characteristics for an executive director included that individual's need to be able to work with all segments of society; the need to be able to raise money from various sectors including grant writing, approval and obtaining of federal funds; lobbying; and, of course, the general management involved in coordination of a Board of Directors and the center's committees.

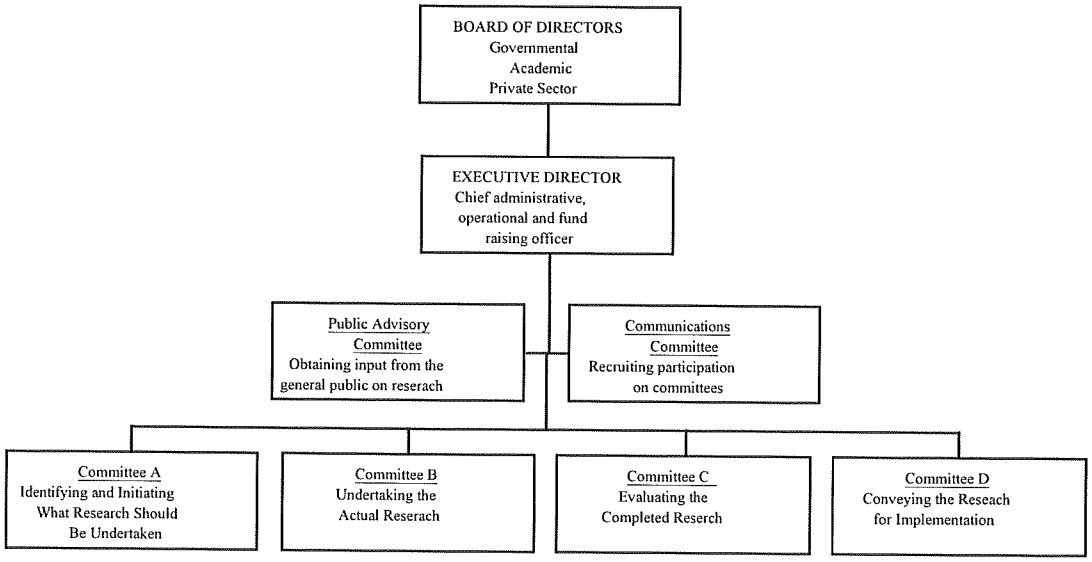
There is no mistaking the critical importance of one other matter. That is the creation of a reporting device for getting completed research out to the various entities responsible for implementation. There were frequent comments about how much research is currently conducted without being implemented; how many policy objectives and strategic plans gather dust. The complaints of having too much research sitting on the shelf was consistent among participants and especially within the participants in the private sector.

Most participants were offered proposed organizational charts for their consideration. The team developed one chart during the middle of the interviews to get reactions to various concepts. The chart was developed based on a model employed by the Western Regional Air Partnership, a cooperative research organization made up of states, tribal entities and federal agencies in the western U.S. and managed by the Western Governors' Association.

Not surprisingly, the comments on the first model indicated that the structure might be too bureaucratic. (See Table 1.) The concept of committees was applauded as being inclusive but there just appeared to be too many of them. The committees also should be inclusive. Their very structure should encourage and provide for participation from broad segments of the state's communities.

Table 1.

UNIVERSITY BASED TRANSPORTATION RESEARCH CENTER
ORGANIZATIONAL MODEL I (081698)



The Public Advisory Committee was perceived with mixed feelings. Some participants saw it as an excellent opportunity to add feelings of efficacy to the general public and serve as a check and balance on the board and the center. On the other hand, there was significant opposition with the fear being expressed that a Public Advisory Committee could paralyze the efforts of the center.

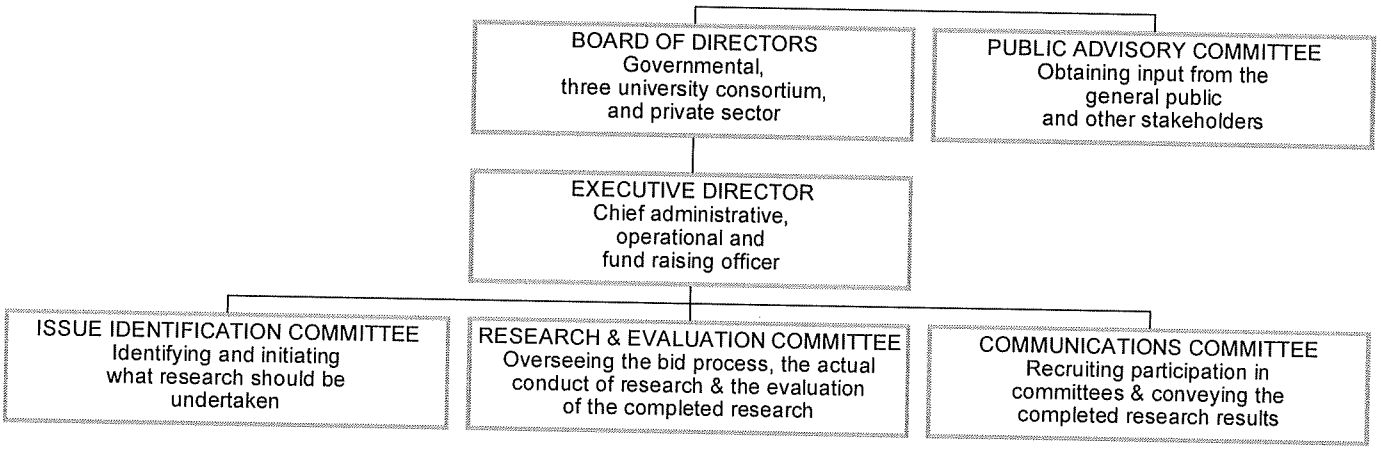
The team took comments about the bureaucratic nature of the original model and the concerns and comments about the Pubic Advisory Committee and modified the organization

chart coming up with a second generation chart which we began to utilize in the later interviews. (See Table 2.)

The team collapsed the Research Conduct and Research Evaluation Committees into one committee and moved the Public Advisory Committee to status reporting directly to the Board of Directors. That was thought to provide both more direct input and yet also give the board more direct influence into the Public Advisory Committee's work.

Table 2

UNIVERSITY BASED TRANSPORTATION RESEARCH CENTER ORGANIZATIONAL MODEL II (083198)



Reactions to the streamlined model were very supportive. The smaller size and the combination of committees presented the perception of a more efficient operation of a center. Of interest, however, were two additional suggestions made by a number of participants.

The first suggestion was that the Board should create a smaller, more streamlined Executive Committee that could oversee the day to day operation of the center and keep in closer regular touch with the executive director. The advantage here was the sense that the seemingly large size of the Board would make it too difficult to convene on a regular basis. Also, it was seen as an efficient element to have a smaller Executive Committee that could make quicker decisions on day to day operations.

The other suggestion came from the university communities. They saw a permanent Research and Evaluation Committee as being a stifling entity. They recommended a more efficient and broad-based concept. They offered the idea of an *ad hoc* structure comprised of members selected from an academic pool that could be assembled for individual projects. The *ad hoc* group could then continue to oversee that particular project and dissolve at the time the project was completed and communicated to the appropriate entity for implementation.

The private sector's reaction to the *ad hoc* group concept was positive with one caveat. They recommended that the pool include members of the private sector or governmental sectors as appropriate and necessary. Should particular technical members of the private sector be able to bring their expertise to an *ad hoc* group then the center should have their contribution. Further this was viewed as another way of gaining broad support for the center.

One of the interesting discussions came with the subject of who should be able to suggest research and who should select the research entities. Many different ideas came from these conversations. But the most consistent concept was to allow the flow of research to be evolutionary.

Benefit was seen to having research opportunities and suggestions coming from a variety of different places. For example there was a strong desire to have academicians come in with ideas and request funding for their studies. Likewise there was the need suggested to allow the committees, Executive Committee or the Board recommend studies to be conducted. Finally there was the proposal to have research initiated by the councils' of government (COG's), municipalities and ADOT conducted by the center. While adoption of this might be difficult because of some parochialism, it supports the evolutionary development concept previously mentioned.

One finding found rather universal support. That was the need to have the center exempted from procurement laws. Many felt that current procurement laws and procedures take unnecessarily long and stifle the efficient commissioning and completion of research. On the other hand, there is a real danger of at least the perception of misappropriation of public funds. The procurement code is designed to guard against misappropriation of public funds. Foregoing this guard is not without risk. Of course, if the research center were to be totally privately funded it would not be subject to the constraints of the state procurement code. This issue will have to be resolved either by adhering to the procurement code, enacting legislation exempting any state monies appropriated from the code, or using totally private sources of funding for the center.

Suggestions for where to locate the center were relatively consistent. Most interesting was the concept that the center should be "a center without walls" that would not necessarily need a specific location. The modern cybernetic methods of communications and conducting research clearly point to the benefit of a center without walls. But most also agreed that a headquarters was necessary.

The consensus seemed to be to locate the center in Phoenix. Given that Phoenix is the state capitol, and that the center would likely need support both from the legislature and ADOT, locating the center in Phoenix was a frequent suggestion.

That is not to say that there weren't other locations suggested. One that received surprising support was to locate the center at ASU East. Given that part of the mission of ASU East relates to aeronautics, and given that Williams Gateway Airport is connected to that

campus, this was also a logical choice. The hesitations related mostly to the location of the campus, which is a significant distance from where most Phoenix area participants would be.

One further suggestion was that wherever the center was located there should be one or several satellite centers in Tucson and other locations around the state.

BOARD OF DIRECTORS

A group that is broad based and representative was the foundation for consideration of a Board of Directors. Likewise, a concern for an overwhelmingly political Board was raised. Depoliticizing this Board as much as possible was seen as a way to make it more effective. Ideas for finding former government officials and retired executives were suggested, as were concepts like having "visionaries" on the Board. But for every suggestion of a visionary someone suggested practical present day oriented thinkers.

When selecting a Board of Directors participants suggested a rather broad array of possibilities. A strong preference came out for a Board that was "not political". Yet at the same time a bias for specific governmental representation was suggested.

Within that broad array were some significant consistencies. Representatives of the state's three universities are deemed essential. Likewise, representation from the cities and counties were also deemed essential. More often than not, specific groups like the Maricopa Association of Governments (MAG) and Pima Association of Governments. (PAG) were suggested as appropriate representatives of municipal interests.

Other levels of representation from government were also recommended. The Governor's office was mentioned consistently and, of course, ADOT representation was mentioned by almost all participants. Other state governmental entities were mentioned often, such as the Department of Commerce and the Department of Environmental Quality, but they were mentioned less frequently than ADOT and the Governor's office. Also, frequently included was representation from the legislature. The feeling was that so much policy implementation and many funding opportunities come from the legislature that we could not fail to include them.

In the private sector, the most consistent finding was the preference for including disproportionate members of the Board from major employers and from companies that engage in transportation related businesses. There were many specific types of businesses suggested in addition to transportation related businesses. Banks, utilities and high tech companies were frequently mentioned.

Just who should represent these companies was another question, and it was split. Some suggested that people at the chief executive officer or chief operating officer level were the appropriate representatives. But many suggested that these people might be too busy to dedicate the time that would be necessary to run the organization. Of course the higher the official, it was felt, the more opportunity there might be to encourage financial participation and support. But

most came down on the side of getting people who would be able to commit the necessary time and effort to the center. Since funding the center is likely to be a key issue in the formative stage, it might be most advantageous to have the initial board comprised of high level private sector representatives. The representation could later "migrate" to lower level officials once the financial foundation was firmly established.

There was a bias for membership on the Board by representatives of the universities. The representation varied as to just which representatives would be appropriate. There was a powerful argument for including the university presidents as members of the Board. There was just as powerful a claim that presidents' schedules would make their active participation almost impossible. Others mentioned including the Vice Presidents for Research, the Deans of the Colleges of Education and the Vice Presidents for University Relations. Also discussed was the very real possibility that each university would have people from varied positions best suited to participate in this center. The consensus seemed to want to allow the universities to select whomever they deemed appropriate to represent them on the board.

That brought us to another interesting finding. How do you select people to serve on the Board? There appears to be three methods for selecting members of the Board with several derivations of each method. The easiest way is to have "an authoritarian appointment". The Governor could appoint all the members of the Board and would likely balance the appointments so as to be reflective of stakeholder interests.

A variation of this is the concept of self-nomination. This occurs when a particular stakeholder group or identified group is granted a certain number of seats. Then the group is asked to recommend a number of people that exceeds the number of available seats on the board. From those nominations the Governor or other authoritarian figure makes the final appointment.

Another methodology is self-selection. This occurs when you offer a stakeholder group a particular number of seats and let them fill the vacancies. The university example is a good illustration of this. Provide one seat for each university and let the presidents make their own selection.

There is also the automatic seat concept. Some clearly identified Board positions are created and automatically filled. For example, a frequently mentioned name for the Board is whoever happens to be the Director of ADOT at the time. That position requires no nomination, selection or appointment. It is an automatic member.

Of course there are other variations on this. What appeared to come as a consensus of participants was the combination of all the above methods. The team found that certain stakeholder groups are particularly indigenous to specific methodologies of appointment. Self-selection of university representatives is obvious while self-nomination by a wide variety of members of the private sector would give the Governor or other appointing authority a large list of potential appointees. The application of a combination of methodologies seems to be the most appropriate for this project.

Also addressed was the length of term that members should serve on the Board. Once again the differences between certain stakeholder groups that may occupy Board seats was evident. Consensus developed on no one being able to serve in an unlimited time frame. Some groups have normal time frames that come as a result of terms in office or membership in certain organizations. No specific time frame emerged other than disdain for membership in perpetuity. Each group would have to be looked at within their own context to make judgments on terms on the board.

HOW TO FUND A CENTER

The diversity of opinion on funding is about as wide as the diversity on any other finding in the study. Very passionate views come forth when participants talked about money. The HURF fund is by some deemed to be sacrosanct with regard to its purpose of only funding freeway and road construction. Some take a point of view that the HURF should be freed up to assist in the funding of alternative methods of transportation and multi-modal transportation options. There is little agreement between the two views. This issue creates significant polarization. Currently, the state constitution prohibits HURF taxes from being used on anything other than roads. Voters would have to approve any change in this provision.

Diversity is also apparent in the funding alternatives between and among sources. For example, providing funding through public funds to the universities is seen as a very viable funding mechanism, but that is within the context of several assumptions. One is that all three universities will be involved as a consortium in the operation of the center.

A second assumption is that the Board of Regents would support the center, either through the Governor's recommendation or their own initiation, and propose that the universities put together appropriations requests from the state's general fund through "decision packages" by the legislative appropriations process. This is a very significant assumption in that the universities' support for the funding of this program would not be in place of other priorities that they deem as or more important than the funding of a center.

Another assumption has to do with how the universities are graded or ranked in terms of money that they receive. The grading and rankings have an impact on their status as a Research 1 University. This is of particular importance to Arizona State, which only recently achieved that status and is still fighting to maintain it. How the funds are directed and accounted for is very significant.

Again, however, within the context of these assumptions there appears to be fairly strong support among participants across stakeholder lines for a three-university decision package as one significant component of a center's funding, but only as a component.

The US Department of Transportation is perceived to be a good source of funding for the particular grants and programs that would be undertaken by the center. A 1962 federal law that is

still in force provides matching funds from the US Department of Transportation when matched with a percentage of the funds from ADOT. Some of the universities suggested that ADOT should be significantly more aggressive in pursuing these funds. ADOT, however, did not share that view. Unless additional funding was provided to ADOT, putting more ADOT funds into such a matching program would divert scarce funds from other uses. An alternative would be for private sector participants in the research center to supply funds to ADOT that would be earmarked for matching purposes. Clearly, however, if there is opportunity for USDOT funding of transportation research projects then that component is considered a major potential source for funding a center.

The private sector provided some interesting views on the funding of a center. First, private sector participants noted that whenever a proposal takes the form of a ballot proposition it is the private sector, and the private sector alone, which provides the funding for running the campaign for the proposition. In recent years there have been several such ballot propositions dealing with certain aspects of transportation with a particular focus on mass transit and other multi-modal concepts. The private sector has raised literally millions of dollars for these campaigns, all of which, with the exception of Tempe, failed to obtain voter approval. Whether that money can be prospectively rerouted towards the funding of a center was not clear. There is also the question of whether the concept of using the research center as a substitute for campaign spending would undermine the objectivity sought from such a center. After all, the financing provided in these election campaigns was not for unbiased educational purposes, but to advance a specific agenda of persuading voters to approve tax increases to fund transportation propositions.

There were suggestions from the private sector of the possibility of the creation of some kind of endowment to be used for grants or scholarships. While there is a quick mention of the general disdain for corporate contributions that go to "endowments" there is a notion of support for just that kind of participation. In particular, and not surprisingly, the corporations very much appreciate the credit for their participation in the community that making these kinds of contributions brings. But this kind of a contribution was not seen as an annual contribution. Private sector participants suggested almost uniformly that large annual contributions to a center probably could not be counted on.

Most frequently mentioned private sector participation methods were endowment contributions for graduate and undergraduate research; contributions to private foundations that specialize in transportation research (sadly it is believed that there are no transportation related foundations in the state of Arizona); and, money for the implementation process as has been their practice to date.

Also of interest was the wide disparity in the perceptions of just how much would be required annually to fund such a center. Granted that suggestions ran the gamut from just the administrative costs to funding the entire research function, but the diversity was significant. The range went from one hundred thousand dollars per year to a whopping one hundred million

dollars per year. The mean suggested amount by participants for funding the center was five million dollars per year.

The justification for these kinds of numbers wasn't as dramatic as it may sound. Most academic participants noted that in today's competitive environment, competition is so keen for research dollars that competing for grants of less than six figures is not worth the trouble. Grants that average one half a million to one million dollars are the mean amount in today's academic circles. This is quite a bit larger than the average $100,000 per project price tag for research carried out through ADOT's Transportation Research Center. Given this information, one can see that the suggested mean amount of five million dollars is not an egregious sum.

The most consistent suggestion on the overall funding of the center was a combination of the funding sources of federal, state and private. The most frequently suggested breakdowns of those sources put the federal contribution at 50%, the state contribution at 30% and the private contribution at no more than 20%. In a five million dollar total, that puts the prospective shares at $2.5 million from the federal government, $1.5 million from the state government, and $1 from the private sector. There is considerable doubt that the private sector would be willing or able to contribute this much. Consensus on funding is that five million dollars per year would be required at the beginning. (By way of comparison, ADOT's Transportation Research Center currently is budgeted at around $2 million per year.) If the center grows, larger amounts might be required in succeeding years.

The team reviewed the University Research Center Phase 1 Study report prepared by Vicki Walker and published in July 1998 to look at other states' experiences in funding transportation research centers. (See pages 43 through 54 of that report.) Walker found a diverse funding mix including USDOT Planning and Research (SPR) funds. There did not appear to be a consistent mix in the centers evaluated, but the increase in Arizona's share of TEA 21 moneys for the coming year will increase the amount of SPR funds available by about $500,000 per year. This might present an opportunity to divert this amount from ADOT's current research program without reducing the amount of research to which the department has become accustomed to undertaking.

The diversity in the centers nationally includes funding from a variety of sources. As Walker found, SPR funds and other state highway research funds are diverted to university based transportation research centers' use. There is also some consistency in the use of supplemental legislative appropriations. Furthermore, other direct federal grants have been obtained successfully and, in fact, there seems to be a propensity for pursuing these grants by universities and state departments of transportation. This may in fact be the reference that was offered by participants from Arizona's universities regarding the need for additional aggressive assistance by ADOT in securing federal funds.

PART III. OPTIONS

There is little question that improved research would be of benefit to transportation providers and users. How best to proceed toward this objective entails choosing among options. In this section we will briefly lay out the basic options before making a recommendation.

"DO NOTHING"

There is an existing transportation research center located within the Arizona Department of Transportation. It is oriented toward "applied research" that has immediate implementation possibilities for improving the efficiency and quality of ADOT products, services, and processes. It can be argued that this type of approach is very cost-effective in its utilization of the limited resources available for transportation research.

Research projects are selected by a Research Council comprised of representatives from various sections of ADOT. The primary customers of the ADOT research center are the individuals and sections within ADOT responsible for delivering quality products and services to the users of Arizona's highways. The scope of most research projects undertaken is of relatively narrow focus. Consequently, budgets for each project are small (averaging under $100,000 each) and results can normally be implemented via internal administrative decision making.

The ADOT research center has recently initiated an effort to incorporate a greater participation of the university community in its research program. Based on the concept that there is a potential synergy between ADOT's need for cost-effective research and the university community's need to assist promising students with their academic careers, the ADOT research Center has committed to a major expansion of its student research program for the coming fiscal year. The feasibility of this expansion was demonstrated by the successful completion of two student research projects in the FY1997 program and three in the FY1998 program. The outputs of these student research projects were adjudged comparable to those achieved at much higher budgets using professional consultants.

In sum, the case for "doing nothing" is founded on the premise that the focus of research should be "applied research" of limited scope and immediate applicability, as well as the expectation that the recent expansion of the student research program will evolve into a cost-effective method of achieving objectives that are mutually beneficial to ADOT and the university community.

INITATE PHASE 3 OF THIS PROJECT

As originally conceived, the "University-Based Research Center" project undertaken by the ADOT research center entailed three phases. Phase 1 was an investigation of transportation research centers around the nation. This phase culminated in a report published in July of 1998. This report was used as an input for Phase 2. Phase 2 was an investigation of the potential support for a university-based transportation research center among the "stakeholders" within

Arizona. Phases 1 and 2 were funded by the Federal Highway Administration. This phase culminated in the report you are now reading. Phase 3 is intended to constitute a test of the extent of financial support for a university-based transportation research center. With $100,000 in funding appropriated by the Arizona Legislature, phase 3 would entail the hiring of an interim director for a potential university-based transportation research center. This interim director would use the results of the phase 2 study, particularly the lists of contacts and stakeholders, to solicit private sector financial support for the prospective research center.

It could be argued that proceeding with phase 3 would be the most prudent course of action. It would require only a modest expense in order to obtain crucial information. It was clear from the outputs of both phase 1 and phase 2 that a full-blown university-based transportation research center would cost considerably more than the current ADOT transportation research center does. Finding out whether the stakeholder participants in the phase 2 research interviews would be willing and able to provide financial assistance to help implement their vision of what a research center ought to be will be important information to legislators who may be later asked to appropriate larger sums for an annual operating budget for a new research center. This information will be important both from the standpoint of revealing what portion of the estimated $5 million per year budget must be appropriated and whether the proportion forthcoming from the private sector is sufficient to warrant its establishment.

IMPLEMENT A UNIVERSITY-BASED RESEARCH CENTER NOW

The research from both phase 1 and phase 2 of this project indicates that the prospects for generating much private sector financial support for a new university-based transportation research center are not particularly promising. The private sector does not supply more than a small fraction of the financial resources deployed by transportation research centers in other states. Stakeholders in Arizona expressed some degree of skepticism that private businesses would supply much funding. It could be argued that waiting to definitively get the feedback that private sources will not provide a significant share of the funding may constitute unnecessary delay. It seems highly likely that if there is to be a university-based transportation research center it will have to have a substantial financial commitment from the Arizona Legislature. Perhaps this issue should be confronted now rather than being postponed.

If a new research center is to be implemented there remains the question of whether it should replace or supplement the existing ADOT research center. The idea that a consolidation of transportation research into one institution would enjoy certain efficiencies from eliminating duplication has inherent appeal. Nevertheless, it is clear from the discussions in the focus groups that the envisioned role of the prospective new center is quite different from the role being played by the existing ADOT center. It is obvious that, from ADOT's perspective, the prospective new research center would not be an adequate substitute for ADOT's existing center. ADOT's need for narrow-scoped applied research would be overwhelmed by the envisioned large-scoped projects likely to dominate the agenda of the new research center. ADOT would have a single seat on a 20-member board (see appendix A). The universities and private sector board members would set the agenda of research projects.

The great attraction of the consolidation of research idea is that the federal funds provided to ADOT for research purposes could be used to offset a portion of the estimated $5 million per year operating budget of the new research center. Currently, ADOT's research center has a federal aid allotment of just under $2 million per year. Shifting this to the prospective new research center would reduce the necessary legislative appropriation by 40%. It must be understood, though, that a decision to consolidate ADOT research into a prospective new university-based research center will essentially be a decision to abandon most of the small scope research currently undertaken by the ADOT research center. While it would be an exaggeration to say that this would be a disaster for ADOT, it would be an inconvenience and possibly a hardship in some instances.

The unattractiveness of establishing a new research center as a supplement to ADOT's existing research center is that the legislative appropriation required would be larger. Aside from some modest private sector contributions, virtually the entire $5 million per year operating budget would have to come from state funds. The virtue of establishing the new center as a supplement is that it would not disrupt ADOT's current research program. It might even enhance the evolution of ADOT expanding student research program.

Of course, it is possible that state appropriations for the prospective new research center might consist of the reallocation of existing budgets rather than new spending. Whether this entailed the reallocation of ADOT's budget, the universities' budgets, or some other agency's budget is a question beyond the scope of this paper.

PART IV. RECOMMENDATION

It is our considered judgment that proceeding with phase 3 of this project would be the best course of action for the following reasons:

- It has the virtue of fulfilling the original intent under which this project was launched. Keeping a promise made is important to maintaining the credibility of the research process and the participating partners in that process.

- It seems to us that the prospect for generating private sector financial support is greater if the potential contributors know that the fate of the enterprise depends upon their generosity. It is probable that the financial commitments from the private sector will be smaller or even non-existent if the state legislature has already appropriated an amount sufficient to fund the center. It would be risky and imprudent for the legislature to appropriate an insufficient amount in the hopes that the shortfall would be made up by private sector contributions.

- The private sector stakeholders who express strong opinions on how research ought to be conducted should be given a meaningful opportunity to make more than a verbal contribution to the outcome.

- The relatively low cost of initiating phase 3 of this project makes it a worthwhile investment. Rather than having to make a commitment of $5 million per year right now, the phase 3 investment serves as a kind of "option" that will permit a further investigation before we have to decide whether to make this larger commitment.

- While phase 3 is underway, ADOT can continue its initiative to increase the university community's participation in its current research program. The knowledge and experience gained from this may provide insight that would enhance the effectiveness of a future university-based transportation research center.

APPENDIX A: BLUEPRINT FOR A RESEARCH INSTITUTE

One of the objectives of this phase of the project was to lay out a blueprint organizational structure for a potential new university-based transportation research center. What follows is this blueprint. To help avoid any potential confusion with ADOT's existing Arizona Transportation Research Center we have named this new entity the Arizona Transportation Research Institute (ATRI).

We think the ATRI should be a hybrid organization consisting of a coalition of interests from the private sector, state government, the county and city governments of the state, and a consortium of the three state universities.

The overall policy direction of the ATRI would be developed and overseen by a broad-based Board of Directors selected to represent the aforementioned interests. The implementation of the board's policy objectives and strategies would be undertaken and coordinated by a committee structure which would seek to broaden the input of interests and citizens beyond even the inclusions of the Board Of Directors.

These committees would undertake the identification process of issues that need to be subjected to research in the technical, public policy and public education areas. They would coordinate that actual research function utilizing a pool of academic and private sector experts. They would communicate the results of research undertaken to the state and its political subdivisions for the purpose of maximizing the opportunity for implementation. They would also serve to guarantee broad based and significant public input and participation.

The ATRI would be managed by an Executive Director selected by the Board of Directors. The Executive Director would serve as a chief operating officer whose task would be to foster the operations of the committees' structures and maintain their relationship with the Board of Directors.

The initial creation can be done by an Executive Order of the Governor. A more permanent structure would be developed by the initial Board of Directors through the adoption of a charter and by laws. Likewise, the funding arrangements would be evaluated and pursued for a more permanent funding system to enable the ongoing operation of the ATRI.

BOARD OF DIRECTORS

The Board of Directors should include representation from the private sector. It should also include representation from major government entities and higher education participants who sign a memo of agreement (MOA) to participate in the operation of the ATRI.

The participants who have signed the MOA should include the three universities, the six COGs from around the state, the Governor, the Director of ADOT, and representatives of the legislative branch in an ex-officio non-voting capacity.

The board therefore would be structured as follows:

- One representative from each of the three state universities selected by the president of each university and serving at the pleasure of the university president.

- The COG's would be represented in a quasi-proportional methodology with two representatives from the Maricopa Associations of Governments (MAG) and one representative of the Pima Association of Governments (PAG). Appointment would be made by self selection from the boards of directors of the COG's and members would serve for two-year terms. Members could be re-appointed for additional two-year terms.

- In the case of the COG's other than MAG and PAG these representatives would be selected by a joint meeting of the executive committees of these COG's for two-year terms. Members could be re-appointed for additional two-year terms provided that each COG must have representation on the Board for at least two in any four years.

- The legislature would have a representative of the Senate selected by the President of the Senate and a representative of the House selected by the Speaker of the House each serving two years commensurate with their existing legislative terms. The legislative members would serve as *ex-officio*, non-voting members of the Board.

- From the executive branch the Governor would appoint a member of staff to serve as the Governor's representative and that person would serve a two-year appointment. The Governor having the option to re-appoint the same person for a succeeding term(s). In addition, the Director of ADOT would serve, or select a designee to serve, for a term of two years that would be staggered with the Governor's representative.

- The private sector representation would be selected from two different groups. One group would be four members from non-transportation related employers and the other group would be six members from transportation related employers for a total of ten private sector representatives on the Board. They would be selected from nominations of business organizations and individual business self-nominations submitted to the Communications committee, referred to the Board of Directors of the ATRI, and elected by the Board of Directors of the ATRI. These directors would serve for staggered two-year terms of five and five respectively.

- Finally, there would be two members of the ATRI's Public Advisory Committee selected by the Public Advisory Committee to serve staggered two year terms as ex-officio non voting members of the Board. No one PAC member could serve more than one consecutive term on the ATRI Board of Directors.

BOARD of DIRECTORS SUMMARY TABLE	
Arizona State University University of Arizona Northern Arizona University	1 member selected by the President 1 member selected by the President 1 member selected by the President
Maricopa Association of Governments Pima Association of Governments Other COG's	2 members selected by MAG board 1 member selected by PAG board 2 members selected by joint executive committees of COG's
Governor's representative ADOT Director	1 member appointed by Governor 1 member selected by ADOT director
Legislative representatives (ex officio non voting members)	1 member appointed by President 1 member appointed by Speaker
Private sector transportation related members	4 members selected by the ATRI Board of Directors
Private sector employers non transportation related	6 members selected by the ATRI Board of Directors
Representatives of the Public Advisory Committee of the ATRI (ex officio non voting members)	2 members selected by the Public Advisory Committee
TOTAL BOARD MEMBERSHIP	20 voting members 4 ex officio non voting members

The Board of Directors would be a policy body that would meet four times per year and at such other times at the call of the Chair of the Board. In addition to setting the policy agenda, the Board would review and approve the research recommendations of its committees and could also initiate research recommendations of its own.

The Board would select one of the private sector members as its chair. The chair would serve a one-year term and be subject to reelection as chair for no more than two consecutive one-year terms.

The chair would be the chief executive officer of the ATRI and preside over all meetings of the ATRI Board of Directors. The chair would also sit as a member of, and chair the Executive Committee of the ATRI.

The Board would select one of the private sector members as its vice chair. The vice chair would serve a one-year term and be subject to reelection as vice chair for no more than two consecutive one-year terms.

The vice chair would serve as chair in the absence of the chair. The vice chair would also sit as a member of, and vice chair of the Executive Committee of the ATRI. The vice chair would serve as chair of the Executive Committee in the absence of the chair.

The Board would select one other private sector member as its secretary/treasurer. The secretary/treasurer would serve a one-year term and be subject to reelection as secretary/treasurer for no more than two consecutive one-year terms.

The secretary/treasurer would serve as the chief correspondent and financial officer of the ATRI. The secretary/treasurer would serve as a member of the Executive Committee and be responsible for the preparation of the periodic financial statements of the ATRI and also be responsible for the conduct of an audit of the ATRI's financial and management status no less than once every two years.

EXECUTIVE COMMITTEE

The ten-member Executive Committee would consist of eight voting members including:

- The chair of the Board.
- The vice chair of the Board.
- The secretary/treasurer of the Board.
- The executive director of the ATRI.
- The Director of ADOT.
- One university member of the Board of Directors selected by the university representative members of the board on an annual rotating basis with each university being represented on the Executive Committee at least once every three years.
- Two COG members of the board selected by the COG board members with those two members being rotated every year.
- The two legislative representatives on the board shall serve as ex-officio, non-voting members of the Executive Committee.

The Executive Committee would be the operations committee of the ATRI, meeting at least monthly and at such other times at the call of the chair of the Executive Committee.

EXECUTIVE DIRECTOR

The Board of Directors would select an executive director of the ATRI who would serve with compensation as set by the Executive Committee and serve at the pleasure of the Board. The executive director would be appointed by a majority vote of all members of the Board of Directors of the ATRI and could be removed by a majority vote of all members of the Board of Directors of the ATRI.

The executive director would be the chief operating officer of the ATRI and would be responsible for:

- The operations of the ATRI.
- The coordination of the committees of the ATRI.

- The identification, solicitation and acquisition of the funding necessary to conduct the business of the ATRI.
- The coordination of the issuance of the RFP's and selection of the successful bidders for research projects sponsored by the ATRI.
- Such other things as may be assigned to the executive director from time to time by the Board of Directors and the Executive Committee.

COMMUNICATIONS COMMITTEE

The Board of Directors would appoint a Communications Committee consisting of:

- The executive director of the ATRI.
- One private sector member of the board of director.
- One member of the Board of Directors who is not a private sector member of the board.
- One member of the PAC selected by the PAC.
- Three at large members who are not members of the Board of Directors or any other committee selected by the Executive Committee from nominees submitted to the Communications Committee for consideration.

The Communications Committee shall annually select its own chair from among the at large members of the Communications Committee.

The charge of the Communications Committee would be to create opportunities for communication with, and education of, the public and interested groups on issues surrounding the ATRI's activities, and to develop a mechanism to ensure ongoing internal communications within the ATRI.

The Communications Committee would also receive research proposals from groups or individuals and refer them to the Issues Identification Committee for review. In addition, the Communications Committee would be responsible for distribution of completed research to the public, specifically to the governmental entities responsible for implementing the findings, and to the specific stakeholders who would likely be participants in the implementation of or be affected by the implementation of the research.

Furthermore, the Communications Committee would develop strategies for educating governmental entities, the public and the affected stakeholders. The strategies would include pilot projects, school programs, workshops, peer to peer communications, business outreach, newsletters and a website. The strategies will vary depending on the governmental entities responsible for implementing the findings and the specific stakeholders.

PUBLIC ADVISORY COMMITTEE

The Public Advisory Committee (PAC) would be made up of individuals who would be representative of the general public and of organizations that have an interest in and participation

with issues related to transportation. The Communications Committee of the ATRI would solicit letters of interest for participation on the PAC. The Communications Committee would then review the letters of interest and make a recommendation to the Board of Directors recommending PAC membership. The size of the PAC would be set annually by the board but would be no less than 30 individuals. Individuals selected for membership on the PAC would serve staggered two-year terms.

The PAC is designed to be representative of the public at large that is not otherwise represented on the Board of Directors of the ATRI therefore the following people would not be eligible to serve:

- No university employee could be a member of the PAC.
- No elected official of any city or county government could be a member of the PAC.
- No employee of a city or county government could be a member of the PAC.
- No employee of ADOT could be a member of the PAC.

The PAC would meet annually to select its chair and vice chair, and to select its two *ex-officio* non-voting members of the Board of Directors of the ATRI. No member of the PAC could serve as its chair or vice chair for more than one year. At the first meeting of the PAC, the ATRI's executive director would act as temporary chair until the Committee has selected its own.

The PAC is charged with providing input to the Board of directors on the general operation of the ATRI and may recommend issues to the ATRI for its consideration as well as provide input on existing Institute research. The PAC would not be limited with respect to issues and advice it may provide to the ATRI.

In addition, completed research would be submitted to the PAC for review and consideration before the Communications Committee distributes it to the public. The PAC would be allowed to receive public input on its efforts.

ISSUES IDENTIFICATION COMMITTEE

The Board of Directors would appoint an Issues Identification Committee consisting of:

- The executive director of the ATRI.
- One private sector member of the Board of Directors.
- One member of the Board of Directors who is not a private sector member.
- One member of the PAC selected by the PAC.
- Three at-large members who are not members of the Board of Directors or any other committee who selected by the Executive Committee from nominees submitted to the Communications Committee for consideration.

The Issues Identification Committee shall annually select its own chair from among the at-large members of the Issues Identification Committee.

The Issues Identification Committee would be responsible for identifying, reviewing and making recommendations on the issues for consideration of the Board of Directors on which it may be necessary to conduct research. It would take specific research proposals delivered to the ATRI through the Communications Committee and make recommendations on whether the ATRI should proceed to commission such research. It may also recommend specific research topics for which studies might be commissioned. To further its work, the Issues Identification Committee may hold public meetings to take public testimony on the perceived research needs in transportation related issues.

RESEARCH AND EVALUATION ACADEMIC POOL

The Board of Directors would initially request through its university members that the three state universities create a Research and Evaluation Academic Pool. The membership of this pool would consist of academicians representing a broad base of disciplines.

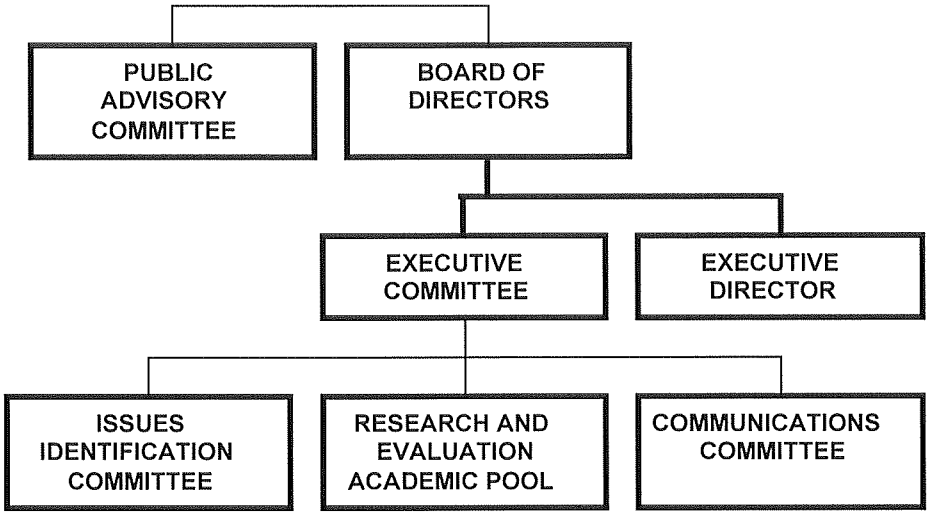
In addition, consideration should be given to adding private sector and government sector members to the pool. This would assure a sound and balanced approach to the conduct of research and its evaluation and review.

Upon receiving approval by the Board of Directors, research projects submitted by qualified individuals or groups may be commissioned by the ATRI. Upon approval of these projects, the executive director would select an *ad hoc* Research Oversight and Evaluation Committee for oversight and evaluation of that particular project. The *ad hoc* committee members would be selected from the Research and Evaluation Academic Pool.

Where issues have been identified for research by the Board of Directors for which no group or individual had submitted a proposal to conduct the research the executive director of the ATRI would convene an *ad hoc* Research and Evaluation Committee for that issue from members of the Research and Evaluation Academic Pool. This committee would then prepare an RFP for distribution to interested parties. The *ad hoc* committee of the particular project would then serve in an oversight and evaluation capacity for the duration of the project.

ARIZONA TRANSPORTATION RESEARCH INSTITUTE

ORGANIZATIONAL CHART



FUNDING REQUIREMENTS FOR THE ATRI

From our review of the other states which currently have a transportation research center and from the findings of this study, it is estimated that the ATRI will require annual funding of at least five million dollars of which roughly 95% will go directly to funding research projects. Some of this may well come from individual grants obtained based on individual research projects. But a significant amount, as much as 60%, should come from designated funds.

The most effective way to develop permanent funding for the ATRI will be to have a flexible combination of funding sources that can evolve over time. It should be made up of federal sources that are a normal part of federal funding contributions such as SPR funds and research grants that will have to be identified and pursued by both the ATRI itself and by the ATRI in cooperation with individuals who present proposals for consideration by the ATRI.

The ATRI will likely have to have support from the state general fund. If the Governor is inclined to recommend that kind of support through the Board of Regents, then a three-university decision package to provide annual funding might be the most efficient and effective way to pursue that funding.

Finally, the ATRI will have to pursue contributions from the private sector. The creation of a "Private Sector Endowment" would be an effective tool giving the center a permanent

source of funds to use for grants and research. Likewise, it would give the universities a source of funding for small grant projects undertaken by undergraduate and graduate students. It would also give the ATRI an easy mechanism for rewarding private sector contributors by naming grants or scholarships after the contributing entities.

The ATRI should also adopt in its by-laws or charter a provision which specifically limits the ATRI to spending no more than a particular portion of its funds for administration of the ATRI.

INITIAL CREATION OF THE ATRI

There will need to be some authority that will have to create the entity, the Arizona Transportation Research Institute. (The term Institute was selected at the recommendation of the university presidents as being a more compelling word than any of the other suggested alternatives.)

The most efficient commencement would be for the Governor to issue an Executive Order creating the ATRI. Included in the Executive Order would be an intent clause that could serve to establish the mission of the ATRI:

"The intent of the Arizona Transportation Research Institute is to facilitate cooperation among the state and its agencies, political subdivisions, the private sector employers of the state, and the public at large for the development and implementation of technical, public policy and public education transportation related research. It is also the intent of the ATRI to facilitate the inclusion of the general public's opinion and input into these efforts."

Membership in the initial Institute would be appointed from among governmental entities who would design a memo of agreement (MOA) to participate as a member of the ATRI and to refer its technical, policy and education transportation related research issues and projects to the ATRI for coordinated results. Such members would include:

- The Arizona Department of Transportation.
- Such other executive branch departments as would be appropriate such as the Arizona Department of Commerce and the Arizona Department of Environmental Quality.
- Arizona State University, the University of Arizona and Northern Arizona University.
- The Maricopa Association of Governments, the Pima Association of Governments and the other COG's from around the state, and any other governmental entity in Arizona.

The members of the initial Board of Directors would have a term of one year or serve until such a time as the permanent Board is selected. The initial Board of Directors would consist of:

- One representative of each of the state's three universities.
- Two representatives of cities within MAG.

- One representative of cities within PAG.
- Two representatives of cities within the other COG's within the state
- Ten members of the private sector including private sector transportation related business representatives.
- One member of the Arizona State Senate.
- One member of the Arizona House of Representatives.
- The Governor or her designee.
- The Director of ADOT or her designee.

The initial Board of Directors would select an Executive Committee as recommended by this report and would be charged with the responsibility of adopting a charter and/or by-laws from which to operate. The initial Board would also select an individual or firm that would serve as its initial executive director. A permanent executive director would be selected upon creation of the permanent Board of Directors.

In the executive order, the Governor would also appoint the initial Communications Committee. The initial Communications Committee would consist of members reflected in the recommendations of this report. They would be appointed so as to facilitate immediate recruitment of potential members for the permanent Board of Directors, for the Public Advisory Committee and to have a recipient of initial proposals for research.

The Executive Order would reference the blueprint of this study and direct the Board to convert that blueprint into a charter or by-laws and adopt them as its initial operating charter. By having ADOT included in the ATRI, any existing funding in ADOT could be utilized as initial funding for paying the executive director and developing the first year's operation.

The Executive Order would also charge the initial Board with the responsibility of appointing the initial members of the Public Advisory Committee and charging the universities' representatives to commence the creation of the Research and Evaluation Academic Pool. With the pool in place the ATRI could actually, upon identification of funding, commence research.

APPENDIX B: Stakeholder Matrices

GOVERNMENT STAKEHOLDER MATRIX

Government & Political Subdivisions

Organization	Chairman of the Board	Executive Director	Public Affairs Director or Lobbyist
Office of the Governor 542-4331	Governor Jane Hull	Leslie Johnson 542 1428	Nancy Baehre 542 1341
Az Department of Transportation 256 7011	Mary Peters 255 7227	Jennifer MacDonald 255 8836	Jennifer MacDonald 255 8836
Az Department of Public Safety 223 2359	Joe Albo 223 2359		
Az House of Representatives	Speaker Jeff Grossscost 542 5735 Majority Leader Lori Daniels 542 5898	Environ. Com. Chair Carolyn Allen 542 4225 Approps. Com. Chair Bob Burns 542 5872	Educ. Com. Chair Dan Shottell 542 5839
Az State Senate	President Brenda Burns 542 4233 Majority Leader Marc Spitzer 542 4480	Environ. Com. Chair Pat Connor 542 4139 Approps. Com. Chair Rusty Bowers 542 5288	Educ. Com. Chair John Huppenthal 542 4178
Maricopa Association of Governments 254 6300	Elaine Scruggs	Jim Bourey	Vacant
Pima Association of Gov'ts 520 792 1093	Shirley Villegas	Thomas L. Swanson	Melaney Seacat 520 628 5313
Northern Az Council of Gov'ts 520 774 1895	Paul Babbitt	Kenneth J. Sweet X181	Kenneth J. Sweet X181
County Supervisors' Association 252 5521	Les Thompson 520 32 9203	P. Jerry Orrick	P. Jerry Qrrick
AZ Association of Counties*	Helen Purcell 506 3628	Shawn Lyons	Garry Gartell
League of Cities and Towns** 258 5786	Chris Bavasi 520 779 7600	Cathy Connolly	Kent Fairburn

*The Arizona Association of Counties would be asked to put together a group of transportation engineers and other interested parties from a cross section of counties that the project team can interview.

**The League of Cities and Towns were be asked to put together a group of transportation engineers and other interested parties from a cross section of municipalities that the project team can interview.

HIGHER EDUCATION STAKEHOLDER MATRIX

Arizona State University

College Or Administration	**Vice President Institutional Advancement Or Provost**	**Director of Univ Institution/Foundation Or Dean**	**Development Officer Or Dept Head**
ASU Administration	Allan Price 965 4891	Lonnie Ostrom 965 3759	
College of Engineering		Dean Peter Crouch 965 3421	
College of Agribusiness and Resource Mgmt		Dean Ray Marquardt 727 1585	
College of Business		Dean Larry Penley 956 5516	
College of Public Programs		Dean Anne Schneider 956 1034	

ASU East

ASU East Administration	Charles Backus 727 1141		
Aeronautical		Dean Al McHenry 727 7275	
Emory Riddle		Dave Ferrell 520 708 6642	

Northern Arizona University

NAU Administration	Ted Ford 520 523 3151	Ted Ford 520 523 3151	
College of Engineering		Dean Mason H. Sommerville 520 523 2880	
College of Business Administration		Dean Susan Casebeer 520 523 2395	

University of Arizona

U of A Administration	Bruce Wright 520 6214088	Dick Inwalle 520 621 1483 Ms. Shaun Griffith 602 244 4820	Linn Wallace 520 621 1067
College of Engineering		Dean Thomas Petersen 520 621 6594	Muni Buhno 520 621 6594
College of Agriculture		Dean Eugene G. Sander 520 621 7621	
College of Business and Public Administration		Dean Mark Zupen 520 621 2125	

TRADE AND OTHER MEMBERSHIP ASSOCIATIONS STAKEHOLDER MATRIX

Chamber of Commerce and Economic Development Organizations

Organization	Chairman of the Board	Executive Director	Public Affairs Director or Lobbyist
Greater Phoenix Leadership 221 4506	Mike Welborn 221 1674	Gen. Tom Browning	Tonia Garrett 221 4502
So. Az Leadership Council 520 882 5118	Charlie Bayless 520 884 3604	Barbara Huffstetler	
Az Association of Industries 252 9415	Garret Weyand 829 8000 x110	Nancy Russell	Knox Kimberly 229 5900
Az Chamber of Commerce 248 9172	Dean Borgman 891 9001	Tim Lawless	Jim Norton 248 9172 x24
Az Chamber of Executives 932 2260		Sharolyn Hohman	
Phoenix Chamber of Commerce 254 5521	Kathleen Lucier 528 7482	Valerie Manning	Todd Bankofier 495 6470
GSPEC 256 7700	Mary Yarbrough 406 3101	Rick Weddle	
Tucson Chamber of Commerce 520 792 2250	William Valenzuela 887 5652	Jack Camper	Ron Stuht 520 792 2250 x127
Az Assoc for Economic Development 921 9131	Evelyn Kasuga 250 2380	David Bixler	Camaeron Moore 520 779 7658
GTEC 520 882 6079	Dorothy Finley 520 623 8800	Robert Gonzales	Duff Hearon 520 293 9000

Trade Associations

Arizona Mining Association 266 4416	Tom Scartaccini 520 798 7711	Chuck Shipley 266 4416	Jim Bush 916 5329
Grand Canyon State Electric Coop Association	Larry Forehand 520 744 2944	Tom Jones 286 6925	Tom Jones
Arizona Bankers' Association 258 1200	John Gisi 235 6000	Ellen Poole 258 1200	Ellen Poole 258 1200
Western States Petroleum Assoc 818 543 5338	Dwight Wiggins 908 523 5181	Gina Grey 905 0295	Charlie Stevens 252 7259
Arizona Farm Bureau 470 0088	Ken Evans	Andy Kurtz	Jim Klinker

Arizona Hospital Assoc 968 1083	Charles Welliver 495 4137	John Rivers 968 1083	Laurie Lange 968 1083
HMO Association 956 5755	Jack Towsley 200 1385	Gay Ann Williams 956 5755	Gay Ann Williams 956 5755
AZ Rocks Products Assoc 271 0346	Brad Larson 437 5400	Ken Quartermain 271 0346	Ken Quartermain 271 0346
Cable Television Assoc 955 4122	Jeff Adler 520 855 5168	Susan Bitter-Smith 955 4122	Susan Bitter-Smith
Amer. Automobile Assoc 833 0009	Jacob Struble	Jim McDowell X2777	Norm Miller 248 2900
Arizona Retailers Assoc 833 0009	Coy Shoemaker	Michelle Ahlmer 833 0009	Michelle Ahlmer
Az Food Marketing Alliance 252 9761	Mike Zachrich 212 1111	Duane Richard 252 9761	John Mangum 252 5222
Regional Public Transit Association 262 7242	Major Skip Rimsza 262 7111	Ken Driggs 262 7242	Matt Ortega 262 7242
Az Broadcasters Assoc 274 1418	Debbie Wagner 520 623 7556	Art Brooks	Bob Fannin 230 5513
Az Consulting Engineers Assn 995 2198	Stan Turney 520 770 1789	Janice Burnett 826 1280	Mike Williams 241 8525
Associated General Contractors 252 3926	Tom Royden 484 0028	David Martin	David Martin
AZ Subcontractors Coalition 273 8979	David Neal	Mary Webster	Mike Williams 241 8525
American Institute of Architects 252 4200	Ronald Peters 827 2759	Tina Gobbel	Mike Green 916 5444
Agribusiness Council of Arizona 231 9224	Jim Sweeney 546 8266	Dave Iwanski	Joe Abate 248 0372
AMIGOS 279 3199	Lynn Thomas	Sydney Hoff-Hay	Sydney Hoff-Hay
AZ Ambulance Association 655 7203	Bob Ramsey	Bob Ramsey	Jim Skelly 655 7417 Elaine Arena 860 2727
AZ Association of Realtors 248 7787	John Foltz 957 0444	Ty Strout	Alice Martin
AZ Builders' Alliance 274 8222	Tom Chestnut 520 733 3300	Mark Minter	Mark Minter
AZ Cattle Growers Association 267 1129	Brent Atkin	Bas Aja	Bas Aja

AZ Cotton Growers Association 4371344	Larry Jarnagin 877 3914	Rick Lavis	Rick Lavis
AZ Medical Association 246 8901	J. Michael Powers	Chic Older	David Landrith
AZ Mobile Housing Association 952 1102	Ted Poelstra 520 907 2837	Jim McIntyre	Mike Green 916 5444
AZ Towing Association 890 7161	David Clement 898 1212	Mary Kay Meyers	Mary Kay Meyers
AZ Society of CPA's 273 0100	Peggy H. Ullmann 224 0166	Gary Julian	Kevin Demenna 264 4313
AZ Tax Research Association 253 9121	Meyer Turken 272 6601	Kevin McCarthy	Kevin McCarthy
AZ Transit Association 255 0610	Alan C. Wulkan 966 8295	Jim Shipman	Jim Shipman
Homebuilders Assoc of Central AZ 274 6545	John Napolitan 941 0818	Connie Wilhelm-Carcia	Spencer Camps
Homebuilders Assoc of So. AZ 520 795 5114	Michael White	Alan Lurie	Alan Lurie
NFIB 263 7690		Samantha Fearn	Samantha Fearn
Valley Partnership 266 7844	Clesson Hill 998 2661	Maeve Johnson	Maeve Johnson
Outdoor Advertising Association 622 6777	Manny Molina 957 8116	Bob Fannin	Bob Fannin 230 5513

Labor Organizations

Organization	**Chairman of the Board**	**Executive Director**	**Public Affairs Dir. or Lobbyist**
Central Arizona Labor Council 263 5460	William Murphy 263 5460	Chuck Huggins 631 4488	Bill Hogan 631 4488
Firefighters Association 277 1500	Pat Cantelme	Mike Colletto 265 7332	Tim Hill 265 7332
AFSCME 252 6501	Ray Valenzuela	Ray Valenzuela	David Mendoza
Highway Patrolmens' Association 241 8551	Tom Powers		Ed Wren 264 5081
Teamsters 272 5561		Andy Marshall X112	Andy Marshall X112
AEA 84 8510	Frank Kelley 973 6172	Kay Leibrand	Mary Kay Havalind

Hospitality Industry

Licensed Beverage Association 285 1092		Lee Tilford	Don Isaacson 274 2200
Beer Distributors		Bob Delgado 264 1635	Mike Green 916 5444
Az Hotel Motel Association 604 0729		Margaret Walker	Ed Wren 264 5081
Soft Drink Association 264 5081	Ron Goodson 437 7000		Ed Wren 264 5081
Az Restaurant Association 234 0701		Joe Yuhas 234 0701	Mike Green 916 5444

Transportation Associations

Az Automotive Trade Association 491 1301	Ruben Bermudez 977 4611	Debra Margraff 491 1301	Mike Williams 241 8525
Arizona Railroad Association			
Az Automobile Dealers Association 468 0888	Tony Komadina 931 9111	W. Knox Ramsey, Jr. X104	W. Knox Ramsey,Jr. X104
Az Motor Transit Association 252 7559	Chuck Busskohl 437 3484	Terry Smalley 252 7559	Terry Smalley

CORPORATE STAKEHOLDER MATRIX

Banks and Financial Institutions

Corporation	Chief Executive Officer Chief Operating Officer	Public Relations Community Relations Or Public Affairs Managers	Dir of Corporate Foundation or Corporate Contributions
Wells Fargo 800 411 4932	Kathleen Lucier 378 4495	Marilyn Taylor 378 4441	Marilyn Taylor 378 4441
Norwest	Jon Campbell 248 2115		
Bank One 221 2900	Mike Wellborn	Steve Roman 221 1267	Steve Roman 2211267
Bank of America 597 5000	Vacant	Dave Howell 594 6506	Dave Howell 594 6506

Communications

Sprint PCS 651 7400	Andy Sukawaty 816 559 1202	Don Isaacson 274 2200	Jennifer Love 559 6050
Cellular One 948 8543	Greg Kilmek	Wendy Wheeler	Wendy Wheeler
Air Touch 224 7600	Sam Ginn 425 747 4900	Paul Borseli	Dave Howell 594 6506
Nextel 470 7500/ 921 2020	Kirk Jones 470 7500	Danielle Cataifio 470 7533	Danielle Catalfio 470 7533
AT&T 224 9090	Dan Hesse 425 803 4000	Tony Benavidez 224 2935	Jim McPherson 224 2888
US West 630 1110	Wayne Allcott 630 6666	Manny Lerma 235 3443	Prescilla Cappuccilli 505 245 7777

Development

Dell Webb 808 8000	Philip Dion	Ken Pionski	Ken Pionski
Robson 895 9200	Edward Robson	Mike Osborn	Edward Robson
Sun Chase 852 5588	Bill Pope	John Christensen	Sue Keeler
Sun Cor 285 6800	John Ogden	Paula Burley 285 6811	Paula Burley 285 6811

Health Care

Cigna 942 4462	Dr. Clyde Wright 371 2500	Steve Tomme 371 2592	Steve Tomme 371 2592
Blue Cross 864 4400	Robert Bulla 864 4400	Marty Laurel 864 4324	Marty Laurel 864 4324
United 200 1313	Jack Towsley 200 1385	Mike Williams 241 8525	Paul Hampsch 200 1319
Aetna 800 872 3862	Richard Huber	Bobby Pena 510 941 2826	Marilda Gandera Alfonso 860 273 4700 x7580
Intergroup 520 721 4444	Ed Munno	Donna Kreutz 290 5806	Cynthia Suzuki 916 631 5175
Premier 248 0404	Dr. Gerald Marshall	David Stewart	David Stewart
Pacificare 244 8200	Steve Lindstrom	Jack Jaroth	Riva Gebel 714 825 5126

Hi Tech Computer

Allied Signal 365 2100	Larry Bossidy 973 455 2000	Steve Bloch 365 2641	Kyle Hultquist 365 2050
MicroAge 804 2000	Jeff McKeever 366 2400	Michelle Gorel 366 1218	Cindy Sellman 366 2317
TRW 987 4000	Joseph Gorman 216 291 7000	Bob Fannin 230 5513	Laura Johnson 216 291 7000
Insight 902 1000	Eric Crown 333 3000	Susan Haywood 333 3000	Susan Haywood 333 3000
Raytheon 520 794 3000	David McPherson 520 794 5501	Allan Stanton	Joe Coyle 520 794 4041
Lockheed Martin IMS 254 1681	Judith Allen 254 1681	Mike Williams 241 8525	Rachel Seward 262 5220
Motorola SPS 952 3000	Christopher Galvin 847 576 5000	Anne Wendell 952 3505	Laurence Moore 441 3578
Honeywell 436 2311	Eldon Kramer 436 1726	Duanne Yorko 436 5301	Eldon Kramer 436 1726
Intel 554 8080	Craig Barrett 554 5977	Sandy Black 554 5429	Sandy Black 554 5429
Boeing	Dave Brown 562 593 6061	Mike Green 916 5444	John Hayden 206 655 2735
Sitix Sumitomo 473 6000	Robert Gill	Mary Budinger	Paul Dombroski
Cable Systems International 233 5000	Peter Woog 233 5555	Ron Ober 274 4244	Joyce Melter 233 5045

Media

Tribune Newspapers 898 6500	Karen Wittmer 898 6504	Richard Davis 898 6574	Karen Wittmer 898 6504
Arizona Republic 444 8000	John Oppedahl 444 8132	Bill Shover 444 8201	Bill Shover 444 8201
Az Newspaper Association 261 7655	John Fearing X105	Phil MacDonald	Paula Casey X102
Outdoor Systems 246 9569	Arthur Moreno	Tom Wise	Tom Wise

Mining & Extraction

Corporation	**Chief Executive Officer Chief Operating Officer**	**Public Relations Community Relations Or Public Affairs Manager**	**Dir of Corporate Foundation or Corporate Contributions**
BHP 520 575 5600	Glen Andrews 520 575 5671	Vacant	Janice Sine 520 575 5671
Phelps Dodge 234 8100	Doug Yearley 234 8146	Kevin Kinsall 234 8176	Tracy L. Bane 234 8018
Cypress Climax 929 4400	Jeff Clevenger 929 4461	Jim Hartdegen 929 4474	Nancy Magan 929 4484
ASARCO Incorporated 212 510 2000	Frank Mcallister 520 798 7730	Bob Quick 520 798 7767	Don Noyes 212 510 1813

Other

Dial 754 3425	Malcom Jozoss	Nancy Stern 754 4090	Nancy Stern 754 4090
American Express 492 8100	Gordon Smith 492 4009	Karen Scates 492 7474	Karen Scates 492 7474
Viad 207 4000	Bob Bohannon	William Teltier	Leon Revitz
Waste Management 257 1313	Dave Hauser 417 0400	Don Cassano 470 2360	Don Cassano 470 2360

Petroleum

Mobil 916 444 7852	Low Noto 703 846 4075	Bob Fannin 230 5513	Carolin Keith 310 212 4618
Tosco 530 5053	Thomas O'Malley 203 977 1016	George Seitz 530 5139	Julie Igo 530 5155
Phillips	H.J. Reid 405 270 8119	Ron Ober 274 4244	Ron Ober 274 4244
Texaco 818 505 2655	Jim Morgan	George Smalley 281 874 4932	Vacant
ARCO 563 9692	Bruce Johnson	Jim Bush 916 5329	Russell S. Akajuchi 213 486 3158

Sports

Phoenix Suns 379 7900	Jerry Colangelo	Rob Harris	Tom Ambrose
Arizona Cardinals 279 0101	Mike Bidwell	Adelle Harris	Pat Tankersley
Arizona Diamondbacks 462 6500	Jerry Colangelo	Craig Pietenik	Craig Pietenik
Phoenix International Raceway 252 3833	Buddy Jobe	Judi Hamilton	Mike Green 916 5444
Phoenix Coyotes 473 5600	Richard Burke	Lori Summers	Lori Summers

Transportation

Corporation	**Chief Executive Officer Chief Operating Officer**	**Public Relations Community Relations Or Public Affairs Managers**	**Dir of Corporate Foundation or Corporate Contributions**
America West 693 0800	Richard Goodmanson	C.A. Howlett	Anne Bry
Chevy Proving Grounds 827 5000	Grace Lieblein 827 5203	Jack Sellers 827 5108	Jerry Wilson 248 685 6171
Toyota Proving Grounds 546 5300	Chuck Gulash	Jerry Achenbach	Jim Griffith 313 995 2554
FedEx 901 395 4773	Frederick Smith	Greg Rossiter 901 395 3474	Patrick Melancon 901 395 5006

UPS 404 828 4300	James Kelly	Jim Rogers	James Kelly
Knight Transportation 269 2000	Kevin Knight X213	Tim Cole X292	Randy Knight
Swift Transportation 269 9700	Jerry Moyes	Dave Berry	William Riley

Utilities

Az Public Service 250 1000	Bill Post 250 2588	Marty Shultz	Charles Thompson 250 2888
Salt River Project 236 5900	Dick Silverman	Peter Hayes	Rosemary Gannon
Southwest Gas Corp 861 1999	Jim Loehman	Dick Foreman 395 4257	Betty McColley 395 4084
Grand Canyon Electric Cooperative	Tom Jones 286 625	Tom Jones	Tom Jones
Citizens Utilities 520 774 4592	Dan McCarthey	Kevin Demenna 264 4313	Jim Warren
Tucson Electric Power 520 571 4000	Charlie Bayless	Larry Lucero 520 884 3608	Sharon Foltz 520 884 3730

APPENDIX C: "FACT SHEET"

THE ARIZONA DEPARTMENT OF TRANSPORTATION
UNIVERSITY BASED TRANSPORTATION RESEARCH CENTER PROJECT

The Arizona Department of Transportation is attempting to determine how to create, structure and fund a University Based Transportation Research Center for the State of Arizona.

Issues relating to transportation have become exceptionally complex in recent years. Our view is that they will only become more complex in the future. New technologies are emerging. Inter-relationships with other issues are arising. For example the relationship between transportation and air quality has been at the center of public policy debate and it appears that this debate will only intensify. We need to have the level of academic research to begin to deal with these issues. And that level of research must be in an organized and coordinated manner.

The current phase of the project is to gather the various stakeholders in the process and draw their opinions, attitudes and suggestions on how to accomplish this. Several different methodologies are being utilized to facilitate this effort.

One is through focus groups. Three groups will be heterogeneous groupings of stakeholders from the public and private sectors. One group will be a homogeneous grouping of representatives of the universities' communities. A statistically valid stratified random sample of the stakeholders which the research team assembled with be recruited to attend focus group sessions of 8 to 10 individuals.

Lead by a professional facilitator the groups will dialogue about the purpose of the Center, concepts for structuring the Center (including possible staffing and organizational structure) and the funding opportunities for the Center. There will be no solicitation of funds during any facet of this study.

The results of these focus groups will help to structure stakeholder interviews which will occur during the latter part of July and most of August. The interviews will go into more depth about these issues. For example we will be exploring with participants' different corporate giving patterns and the schedules of corporate foundation decision making so that if the Center wants to pursue grants they will have a viable schedule from which to operate.

Likewise the interviews will review the potential committee structures which may be employed in a functioning Center. Obviously the interviews will be tailored to meet the backgrounds and focus of the particular stakeholders.

When asked to participate in a focus group or as part of an interview we hope that you will be willing to devote the limited amount of time we ask from what we know is a very busy schedule. The contribution you make through the process of this study will be very important to the ultimate structure and success of the University Based Transportation Research Center in Arizona.

THE ARIZONA DEPARTMENT OF TRANSPORTATION
UNIVERSITY BASED TRANSPORTATION RESEARCH CENTER PROJECT

"FACT SHEET"

The Arizona Department of Transportation is attempting to determine how to create, structure and fund a University Based Transportation Research Center for the State of Arizona. We have been contracted to conduct this study and develop a blueprint for the creation of such a center.

Issues relating to transportation have become exceptionally complex in recent years. Our view is that they will only become more complex in the future. New technologies are emerging. Inter-relationships with other issues are arising. For example the relationship between transportation and air quality has been at the center of public policy debate and it appears that this debate will only intensify. Likewise the relationship between transportation and land use planning is taking on intensified significance in a period of high growth.

In order to deal with these issues our attention to research in the technical, policy and opinion arenas must be heightened. This is especially true in the policy development area. Perceptions have arisen that question the independence of existing policy research. Other states have in place university based transportation research centers which incorporate a multi-faceted approach to transportation research for their states. Institutes at Texas A&M, the University of South Florida and Penn State for example appear to provide their respective states with a more focused and coordinated approach to transportation research.

We are developing a blue print for the creation of a university based transportation research center in Arizona. In order to do so we developed a stakeholder matrix which identifies most of the academic, private sector and public organizations which hold a stake in transportation issues. We conducted focus groups, the results of which helped to create a script from which we have been interviewing various stakeholder groups.

We are now in the second half of those interviews. They include questions about transportation issues, the concept of a university based transportation research center, the proposed structure for such a center - including who to include on a board of directors and committees - and ideas on funding such a center. We have developed several models which interviewees are being asked to comment on and recommend changes to.

Following completion of the interviews we will be developing a draft final report for submission to the Department of Administration.

When asked to participate as part of an interview we hope that you will be willing to devote the limited amount of time we ask from what we know is a very busy schedule. The contribution you make through the process of this study will be very important to the ultimate structure and success of a University Based Transportation Research Center in Arizona.

APPENDIX D: NARRATIVE SUMMARIES OF FOCUS GROUPS

GROUP I
UNIVERSITY EDUCATORS
(Conducted at the beginning of the study.)

The following members of State Academic institutions participated in the initial focus group session:

University of Arizona	Eugene Sander - Dean of Agriculture
Northern Arizona Univ	Mason H. Sommerville - Dean/Engineering & Technology
Arizona State Univ.	Ray Marquardt - Agribusiness & Resource Management.
Arizona State Univ.	Lakshmi Munukutla - Technology & Applied Sciences
Northern Arizona Univ.	Steve Nix - Civil Engineering
University of Arizona	Bill Cosart - Engineering
Arizona State Univ.	Sandra Houston - Civil & Environmental Engineering

The initial Focus Group participants were representative of the three state-funded universities from the schools of engineering, agriculture, and technology. The group of academicians was asked, "What kinds of issues are facing Arizona with regard to transportation?" In summary, the priorities for the group substantiated the ongoing public debate of growth and urban sprawl and its effect on air quality; integration of technology; and types of transportation to study and develop (i.e. road vs. rail, etc.).

Additional comments worth noting include the two geographically distinct climates experienced in the state and the geographic structural issues that result. Arizona's proximity to Mexico was also mentioned, with the Route 93 corridor bearing the brunt of NAFTA traffic.

With only 15% of the state land privately owned, Arizona is an urban state with approximately 85% of the population centered in Maricopa and Pima Counties competing against the rest of the state for highway system dollars. Also unique to the Southwest is the Native American population with the Indian Reservations battling for funds. The group agreed that funding transportation studies was an ongoing issue. Arizona is also "home" to a large number of retirees and seasonal visitors.

Participants were then presented three questions concerning research. They were asked what their "perception was of the quality of transportation research that is done in Arizona about these problems, what kinds of research ought to be conducted when addressing transportation issues, and what entities should be conducting that research?"

In summary most participants felt that the current research was of high quality, but not quantity, and that issues regarding the northern section of the state are not addressed. The majority of participants said it is very important how this project gets packaged and sold as it will have a bearing on what goes on as far as research. Participants also felt strongly as a group that

they want to know what is being done elsewhere across the country that might apply to Arizona, then center on what is unique to our state and concentrate on those issues.

In regard to the entities that should conduct the research, most agreed that it should be three-way university collaboration, in addition to consulting with engineering associations, etc. Also important to participants was that the research center be compatible with the global plans of the legislature and executive branch.

The group recognized that cooperation exists between the engineering colleges, and that it would be important to structure the center as an institution without walls in order to take advantage of the diversity of technical talent available at the universities. The group stressed that a university-based center wouldn't mean university-exclusive, and that there should be collaboration with the Consulting Engineers Association, and integration of the trades.

All participants were in agreement that the study should work towards the possible creation of a university-based transportation research center. Endorsed as a positive idea, it was stated that many other states have a university-based transportation research center (i.e. Texas A & M). Virtual centers were suggested and general consensus of the group supported a University consortium – all manage a piece of the study and partner with the private sector.

Funding of the center was the subject of the next set of questions. The general consensus of the group was that the core issue is adequate funding to begin with and a minimum of $5 million is realistic to start. The start up fee should come from state funds with follow up outreach to other entities. Another suggestion was a 3:1 ratio with grants from industry and federal money to help pay for a director and support personnel. A focus group member suggested it would be politically palatable as an outreach program, with employed staff.

Structure of a university based transportation research center should be scientifically solid with an advisory board that is more practical from private or non-university entities. One layer of the board would represent technical and one political, while a higher level advisory board would set the policy. One creative group participant suggested "Don't hire outside people, but rather buy or "rent" existing faculty." Further discussion indicated a Board of Directors would report and protect the research center from legislature where there may be conflicting objectives.

When asked who should serve on a board of directors, the group agreed it should be 70% private sector -30% public sector. Also suggested was an advisory board that is technical and one political and that the board should be expertise based. Possibly this could include the chairmen of BankOne, America West, chairman of railroad, finance committees of House and Senate, or someone full time from the executive branch.

Directors could also choose to consult with advisors from other states who have had previous experience with this model. Furthermore, it was suggested that we consult with each major transportation committee member from the House of Representatives and the Senate, and the Chairs of their Finance committees from each state who have had previous experience with this model. All agree they didn't want it to become a money/power struggle, but want to focus

on education, research and results with a minimal infrastructure and accountability being most important.

General consensus of the group was that one controlling university is best, but all three working together as a consortium is politically sound. They said that the private sector running the Center is unacceptable and that there should be a hybrid board model. University interest correlates to money available for example, the engineering department has a $400 million research budget this year.

All were in agreement that the mission of universities is to develop a work force, educate students and that the research has to relate to the core of education. They also made a point that ownership of the research and technology should be established from the beginning of the center.

The selection of graduate and undergraduate fellowships should be made by individuals involved in the project with the assistance of the advisory boards.

When asked about other issues that had not been covered, it was again emphasized that intellectual properties need to be addressed up front – who owns what and has the right to patent. Also mentioned was the need for a broad cross section of corporate America to be involved.

GROUP II-A
TRADE ASSOCIATIONS AND CORPORATIONS
(Conducted at the beginning of the study.)

• Arizona Motor Transit Association	Chuck Busskohl	Chairman of the Boar
• Arizona Subcontractors Coalition	Gail Carson	President
• Tucson Chamber of Commerce	Ron Stuht	Government Relations
• Arizona Tax Research Association	Michael Hunter	Board Member
• Arizona Department of Public Safety	Rick Knigh	Lobbyist
• Grand Canyon State Electricians Coop	Tom Jones	Ex. Dir./Lobbyist
• Arizona Hotel/Motel Association	Ed Wren	Lobbyist

GROUP II–B
TRADE ASSOCIATIONS AND CORPORATIONS
(Conducted at the beginning of the study.)

• AT&T	Jim McPherson	Lobbyist
• Arizona Consulting Engineers Assoc.	Janice Burnet	Executive Director
• Arizona Republic	Bill Shover	Public Relations
• Arizona Chamber of Commerce	Jim Norton	Government Relations
• Maricopa City Assoc. Government	Dennis Smith	Assistant Director

When asked, "What kinds of issues are facing Arizona with regard to transportation, they assigned the following priorities: mass transit, types of transportation, pollution, maintenance and safety, enforcement, taxes, and planning (growth).

Next participants were asked, "What is your perception of the quality of transportation research that is done in Arizona about these problems? One member of the group initiated discussion on this topic by stating he had participated in a research study at ASU previously, and thought there was already a research center established called Center for Advanced Transportation Research, in addition to ADOT's transportation research. Group members contributed that MAG and DOT have done a lot of research, but it's of fairly average quality. They also thought in general the research was usually late and there was never enough time or projects not finished on time and not adequate. One participant felt that Sky Harbor Airport was well planned into the future.

Research should be concerned with bench marking, and look at best practices from other states that have similar problems. Also, don't overlook the extremity of weather conditions and the effect it has on roads and transportation. This group was concerned about the day to day travel on major interstates and felt strongly that people want their cars and their freedom, and that usage of lane three should not be limited to only high occupancy vehicles.

Several participants felt strongly that research should be conducted by private enterprise as it would be more focused, more efficient and more cost effective. Another person suggested that universities tend to do research for research sake, while another person believes there may be a bias at the universities, yet admitted that universities do have resources. After sorting out their feelings, a general consensus was formed by the group that the universities need to be involved, but in a partnership rather than independently.

Participants were then asked what the possible creation of a university based transportation research center would mean to them. The concept is a good one – comprehensive, coordinated effort is not being done currently. Other comments were:

- Don't know – trade associations don't have the research capability and do have a bias.
- Has to be an organization that can draw on a lot of resources internal and external.
- Tried before, then taken into ADOT. Any agency in direct competition for funds. Dangerous field to be in, as the state is sued all of the time.
- What we would have is a true transportation center that didn't wander off. That's what happened before and moved downtown under the "stack."
- My initial reaction is that it's a good idea – but difficult to get the money. Alphabet soup with all the agencies that also have their fingers in the pie.
- We are in the business, and there's only a small pool of Air Quality Modelers available to draw from.
- If you have university people doing this, then you'd have people to add to the job market.

Participants were then asked about different ways to fund the center and most agreed that a variety of sources needed to be incorporated. National foundations and large private corporations that make significant grants or donations, the Legislature, tax dollars, insurance companies, federal government grants – Governor's office of highway safety. Other suggestions were the Kellogg Foundation and Digital Corporation grants. One participant suggested that a good senator could perhaps get the money appropriated. In addition, United Motor Coach has money available to fund studies.

When asked how to structure a university based transportation research center, an independent board of directors, university representative, ADOT representative, privatized partners, DPS representatives, union, independent representatives were mentioned. Also, a paid chief officer or CEO was recommended. One participant doubted that universities and ADOT would allow an independent Board of Directors to tell them what to do. The suggestion was made that we need to get the Legislature to buy into this plan.

As for who should serve on a board of directors, it was felt that the stakeholders would create the board, as well as suggestions from the legislators and the governor's office. Another commented that an independent board is best and a board of regents. As for the short term to meet immediate needs, a good director would pull it all together for a specific time period. In addition, an advisory committee should be created.

Criteria used to determine the types of research projects to be undertaken would be considered by "Who is paying for it?" Also mentioned was that if you have a good director making determinations or directing which people do the studies, there might be a time issue for giving research projects to students.

All participants said that the selection of graduate and undergraduate fellowships should be made by the director. The right director would recruit the right students and direct them. There are some very bright students working on their Ph.D. Another suggestions was to have a peer review by academic members. Also one person suggested that other transportation planning groups need to be involved. The Indian community and other countries or groups were mentioned that should not be overlooked in Arizona.

When asked what other issues that were not covered, but should be reviewed, the responses were to verify that a research center isn't already going on with some other organization, and take a broader scope on all fronts.

GROUP IV
MIXED GROUP
(Conducted after the interviews were completed.)

Juan B. Valdez	U of A, Dept. Head	Civil Engineering
Sandra Houston	ASU, Chair	Civil Engineering
David Iwanski	Agribusiness Council of AZ	Exec. VP
Dick Foreman	Southwest Gas	Public Relations
Mary Kihl	ASU, Assoc. Dean,	Herberger Center
Barbara Huffstetler	So. AZ Leadership Council	Executive Director
Ken Driggs	RPTA	Executive Director
Charles Backus	ASU East	Provost

This focus group was organized to discuss creation of a mission statement for the proposed Transportation Research Center. While several of the participants shared in the initial focus group session and others were interviewed one-on-one, all had a previous knowledge and input into the proposed research and transportation issues.

As the group assembled, the comments and concerns expressed were the awareness that the participants are building an infrastructure. Additional thoughts had come to mind such as the need to maintain what already exists, to develop cost-effective ways to maintain what is there and land use planning and defining what is the accepted definition of "roads?"

When participants discussed the concept of utilization, construction, maintenance, and the utilization of these distinctly different, yet interrelated aspects of designing a comprehensive research center.

One of the participants verbalized the following question as to "Why am I here if I don't support the mission? How can I possibly offer anything?" He did, however, contribute valuable information as the mission statement was composed.

A representative of the business sector expressed the concern that the university is doing a lot of studies, but the information often goes elsewhere.

The moderator passed out sample mission statements from Fortune 500 companies and the variations were discussed. Then the moderator clearly defined the purpose of the focus group to define the goals and what is the group's desire or global results from the actions taken at this meeting.

The moderator then led the group in defining and prioritizing the key words to use when drafting a mission statement. These include sustain economic growth of Arizona; university research; accountability; objectivity; quality; safety; linkage and partnerships with public and private, as priorities. The following key words were also mentioned: Arizona

competence in transportation; timeliness; opportunity; education and workforce development; moving people and products; social needs; cost efficiency; and, healthier climate.

One participant expressed concern that the Federal Transportation Act TEA-21 regarding transportation equity for the 21st century called for a lot of dollars to be spent that didn't come back to the State of Arizona.

Another participant voiced the "need to focus on the movement of people," and "provide university based research to serve transportation decision making."

The following phrases were part of the working process to define the mission:

"To develop and sustain modern multi-model comprehensive infrastructure in order to move people and products"

"To lead to safer, healthier manner through partnerships with environment."

A group member focused on the word "Modern?" and suggested, "What is modern today, won't be tomorrow."

The moderator suggested a recap of what had been discussed and wrote on the board, "Provide University-based research toward cutting edge to safer healthier more efficient systems."

Changes and additions were made with the following Mission Statement agreed upon by the Focus Group Participants: "Provide University-based research toward developing and sustaining comprehensive transportation infrastructure to move people and products."

Definable objectives were: to conduct leading edge, transportation related research; be accountable to the general public, taxpayers, and policy makers; to contribute to the training and education of a workforce which will address the transportation needs; to promote public and private Arizona-based partnerships; to leverage state and private monies; and, to create an objective group of experts.

A participant added, "There is objective research that has been done across the country that we need to look at a little closer."

The strategies as defined by the group were to develop the program to further safer, healthier public education; to publish and communicate results that are objective, timely and based on specific Arizona needs and competencies; and, to employ and utilize public input.

APPENDIX E: STUDY PARTICIPANTS BY ORGANIZATION, PARTICPANT AND PARTICIPANT TITLE

ORGANIZATION	PARTICIPANTS	TITLE OF PARTICIPANTS
ADOT	Jennifer MacDonald	Legislative Liaison
ADOT	Dick Wright	Deputy Director
AFSCME	Ray Valenzuela	Executive Director
AFSCME	Angel Rodriguez	Field Operations Director
Agribusiness Council of Arizona	David C. Iwanski	Executive Vice President
Agribusiness Council of Arizona	Jim Sweeney	Chairman of the Board
Allied Signal	Kyle Hultquist	Director Public Affairs
Allied Signal	Steve Bloch	Manager of State Govt Relations, Public Affairs
America West Airlines	Anne Bry	Director Community Relations
America West Airlines	C. A. Howlett	Vice President Public Affairs
America West Airlines	Bill Franke	Chairman of the Board
American Institute of Architects	Ronald Peters	BPLW, Senior Principle
American Institute of Architects	Tina Gobbel	AIA Arizona, Executive Director
APS	Charles Thompson	Community Relations Department Leader
APS	Marty Shultz	Government Relations Director
Arizona Automotive Trade Assn.	Debra Margraff	Executive Director
Arizona Automotive Trade Assn.	Ruben Bermudez	President
Arizona Cardinals	Adele Harris	Director of Community Relations
Arizona Cardinals	Pat Tankersley	Special Events Coordinator
Arizona Chamber of Commerce	Tim Lawless	President
Arizona Chamber of Commerce	Jim Norton	Lobbyist
Arizona Farm Bureau	Andy Kurtz	Executive Director
Arizona Farm Bureau	Jim Klinker	Lobbyist
Arizona Mining Association	Jim Bush	Chman, Gov't. Affairs Committee
Arizona Mining Association	Chuck Shipley	President
Arizona Republic	Keven Ann Willey	Editor of Opinions and Editorial Page
Arizona Republic	Joel Nilsson	Editorial Writer
Arizona Rock Products	Ken Quartermain	President
Arizona Transit Association	Alan Wulken	Vice President Parsons, Brinckerhoff, Quade & Douglas, Inc.
Arizona Transit Association	Jim Shipman	Executive Director
Associated General Contractors	David Martin	Executive Director
ASU East Faculty	Dr. Al McHenry	Dean Technology & Applied Science
ASU East Faculty	Dr. Charles Backus	Provost
ASU Faculty	Dr. Peter Crouch	Professor, College of Engineering
ASU Faculty	Dr. Mary Kihl	Associate Dean/Director of Herberger Center for Design Excellence

ASU Faculty	Dr. Jon Fink	Interim Vice Provost Research
ASU Faculty	Dr. Jonathan Upchurch	Professor, Civil & Environmental Engineering
ASU Faculty	Dr. Joseph Carter	College of Business, National Association of Purchasing Management, Professor & Chair
ASU Faculty	Dr. Milton Glick	Senior Vice President & Provost
ASU Faculty	Dr. Alan Price	VP Institutional Advancement
ASU Faculty	Dr. Lonnie Ostrom	Director of Development
AZ Assn. for Economic Development	David Bixler	Executive Director
AZ Chamber Executives	Peggy Jones	Avondale City Council Member, Past Chmn. Tricity West Chamber & Chmn. of the Chamber Transportation Committee
AZ Chamber Executives	Sharolyn Hohman	President & CEO
AZ Consulting Engineers Assn.	Janice Burnett	Executive Director
AZ Consulting Engineers Assn.	John Ritoch	Past President
AZ Department of Transportation	Mary Peters	Director
AZ Food Marketing Alliance	John Mangum	Lobbyist
AZ Food Marketing Alliance	Dwayne Richard	President
AZ Food Marketing Alliance	Debra Albery	Public Affairs Dir. Safeway, Inc.
AZ State Senate	Gus Arsberger	State Senator, District 8
AZ State Senate	Gary Richardson	State Senator, District 27
AZ Towing Association	Mary Kay Meyers	Executive Director
AZ Towing Association	Charles Meyers	Husband & Business Partner
AZ Universities Consortium	Dr. Muniram Budhu	Processor Civil Engineering & Engineering Mechanics, U of A
AZ Universities Consortium	Dr. Mary Kihl	Associate Dean/Director of Herberger Center for Design Excellence
AZ Universities Consortium	Dr. Edward Nowatzki	Processor Civil Engineering & Engineering Mechanics, U of A
AZ Universities Consortium	Dr. Juan B. Valdes	Department Head Civil Engineering & Engineering Mechanics, U of A
AZ Universities Consortium	Dr. Emmanuel Owusu-Antwi	Assistant Professor Civil & Environmental Engineering, ASU
AZ Universities Consortium	Dr. Sandra Houston	Chair Civil & Environmental Engineering, ASU
AZ Universities Consortium	Dr. Pitu Mirchandani	Professor & Head, Systems & Industrial Engineering
AZ Universities' Consortium	Dr. Steve Nix	Chair Civil Engineering
Bank of America	David A. Howell	Vice President Manager
Bank of America	Kathy Munroe	Chief Executive, Southwest Region
Blue Cross & Blue Shield	Marty Laurel	Director of Advertising & Public

		Relations
Blue Cross & Blue Shield	Sue Glawe	Director of Public Affairs
Blue Cross & Blue Shield	Robert Bulla	President and CEO
Board of Regents	Tony Seese-Bieda	Assistant Executive Director for Public Affairs
Board of Regents	Frank Besnet	Executive Director
Boeing Company	Ed Grazier	Assistant to the President
Central Arizona Labor Council	Charles Huggins	Arizona State AFL-CIO, Secretary/Treasurer
Central Arizona Labor Council	William Murphree	President
City of Glendale	Amy Rudibaugh	Intergovernmental Liasion, City of Glendale
City of Phoenix	Lisa Takatoa	Mangagement Assistant, Intergovernmental Programs, City of Phoenix
City of Phoenix	Norris Nordvold	Intergovernmental Coordinator, City of Phoenix
City of Tucson	Tom Dorn	Consultant, City of Tucson, Jamieson & Gutierrez
City of Tucson	R.B. Nassi	Traffic Engineering Administrator
City of Tucson	Mary Okoye	Director of Intergovernmental Affairs
City of Yuma	Bob Wagner	Interim Public Works Director, City of Yuma
GM Proving Grounds	Grace Leiblein	CEO
GM Proving Grounds	Jack Sellers	Manager of Support Services
GM Proving Grounds	Ernie Arvayo	Director of Public Relations
GPEC	Steve Vierck	Vice President Corporate Locations
Greater Flagstaff Econ. Council	Cameron Moore	President, COO
Greater Flagstaff Econ. Council	Stephanie Stone	Economic Development Specialist
Greater Phoenix Leadership Council	Tonia Garrett	Research & Policy Analyst
Greater Phoenix Leadership Council	Gen. Tom Browning	Executive Director
GTEC	Robert L. Gonzalez	President & CEO
GTEC	Duff C. Hearon	Board Member, President Ashland Group
GTEC	Dorothy Finley	Chairman of the Board, President Finley Distributing Co.
Habitat for Humanity	Dennis Mitchem	Executive Director
House of Representatives	Lori Daniels	Majority Leader, Representative District 6
House of Representatives	Kitty Decker	House Policy Advisor
Intel	Dave Onley	Site Development Manager

Knight Transportation	Tim Kohl	Vice President Human Resources
Knight Transportation	Kevin Knight	CEO
League of AZ Cities and Towns	Kent Fairbairn	Assistant Director, League of Cities & Towns
League of AZ Cities and Towns	Becky Hill	Staff Assistant, League of Cities & Towns
MAG	Jim Bourey	Executive Director
MAG	Neil Juliano	President, Mayor of Tempe
Maricopa Community College District	Dr. Paul Elsner	Chancellor
Mobil Oil Corporation	Randy Smith	Director, State Govt Affairs Western Region
NACOG	Chris Fetzer	Transportation Program Manager
NAU Faculty	Dr. Mason Sommerville	Dean College of Engineering
NAU Faculty	Dr. John Placer	Chair Computer Science
NAU Faculty	Dr. Steve Nix	Chair Civil Engineering
NAU Faculty	Kurt Davis	V.P. For External Affairs
Phoenix Chamber of Commerce	Valerie Manning	President and CEO
Phoenix Chamber of Commerce	Todd Banofier	Executive Vice President
Phoenix Chamber of Commerce	Doug Pruitt	Sundt. Corp.
Phoenix Suns	Tom Ambrose	Senior Vice President Public Affairs
Phoenix Suns	Rob Harris	Vice President Community Relations
Phoenix Suns	Jerry Colangelo	CEO & President
Pima Association of Gov'ts.	Cherie Campbell	Regional Transportation Planner/Coordinator
Pima Association of Gov'ts.	Paul Casertano	ITS Assistant
Pima Association of Gov'ts.	Tom Swanson	Executive Director
Pima County DOT	Brooks Keenan	Director Transportation & Flood Control
Regional Public Transit Assn.	Ken Driggs	Executive Director
Regional Public Transit Assn.	Matt Ortega	Community Intergovernmental Relations Officer
Robson Communities	Edward Robson	CEO
Rural Metro	Edward Sanchez	Director of Public Affairs, Western US
So. Arizona Leadership Council	Barbara Huffstetler	Executive Director
So. Arizona Leadership Council	DiDi Snider	Administrative Assistant
So. Arizona Leadership Council	Si Schorr	Transportation Com. Member
So. Arizona Leadership Council	Gregory Pivirotto	Transportation Com. Member
So. Arizona Leadership Council	Hal Ashton	Transportation Com. Member
So. Arizona Leadership Council	Bill Estes Jr.	Transportation Com. Member
So. Arizona Leadership Council	Karen Rice	Transportation Com. Member
So. Arizona Leadership Council	Walter Burg	Transportation Com. Member
So. Arizona Leadership Council	Michael Hard	Transportation Com. Member

Southern AZ Homebuilders Assn.	Ken Kinared	Community Affairs
Southern AZ Homebuilders Assn.	Alan Lurie	Executive Vice President
Southern AZ Leadership Council	Barbara Huffstetler	Executive Director
Southwest Gas	Dick Foreman	Public Relations
Southwest Gas	Betty McColley	Administrator/Consumer & Community Affairs
Specialty Transportation Services, Inc.	Dale Devalk	Terminal Manager AZ Region
SRP	Dick Silverman	General Manager
SRP	Dick Hayslit	Manager of Environmental Services
Stardust Development	Chris Heeter	President
Stardust Development	Jerry Bisgrove	CEO
State Legislature	Bob Burns	Representative District 17
State Legislature	Randall Gnant	Senator District 28
Sun Cor	Julia Kelly	Director of Marketing
Sun Cor	John Ogden	CEO
Swift Transportation	Dave Berry	Vice President & Controller
Toyota Proving Grounds	Jerry Achenback	Manager of Administration
Toyota Proving Grounds	Charles Gulash	General Manager
Tucson Chamber	Ron Stuht	Lobbyist
Tucson Chamber	Jack Camper	Executive Director
Tucson Chamber	Bill Valenzuela	Chairman of the Board
Tucson DOT	Jim Glock	Deputy Director of Transportation
U of A Faculty	Dr. Pitu Mirchandani	Professor & Head, Systems & Industrial Engineering
U of A Faculty	Dr. Linn A. Wallace	Director of Foundation & Corporate Relations
U of A Faculty	Dr. Eugene G. Sander	Vice Provost & Dean Agribusiness
U of A Faculty	Greg Fahey	Associate Vice President State Relations
University of Arizona	Dr. Peter Likins	President
VIAD	Susan Price	Cushman & Wakefield,
VIAD	Gene Lemon	VP Administration
VIAD	Steve Twist	Assistant General Council
Waste Management	Don Cassano	Regional Manager Community Relations
Western States Petroleum Assn.	Charlie Stevens	Lobbyist
Western States Petroleum Assn.	Gina Grey	Managing Coordinator

APPENDIX F: Summary of Potential Financial Support for an ATRI

(NOTE: The study team did not solicit in any way contributions from the study participants.)

ORGANIZATION	PROBABILITY OF PURSUING SUPPORT
ADOT	As a government agency their financial support would come from appropriated funds or access to federal funds.
AFSCME	Financial support unlikely
Agribusiness Council of Arizona	Financial support from their members could be pursued
Allied Signal	Financial support from corporation or foundation possible
America West Airlines	Financial support from corporation or foundation possible
American Institute of Architects	Financial support from their members could be pursued
APS	Financial support from corporation or foundation possible
Arizona Automotive Trade Assn.	Financial support unlikely
Arizona Cardinals	Financial support from corporation or charities possible
Arizona Chamber of Commerce	Endorsement possible - could be used to solicit member support
Arizona Farm Bureau	Financial support for research indigenous to agriculture could be pursued from members
Arizona Mining Association	Financial support for research indigenous to mining industry could be pursued from members
Arizona Republic	Financial support from corporation or foundation possible
Arizona Rock Products	Financial support unlikely
Arizona Transit Association	Endorsement possible - could be used to solicit member support
Associated General Contractors	Financial support unlikely
ASU East Faculty	As a government agency their financial support would come from appropriated funds or access to federal funds.
ASU Faculty	As a government agency their financial support would come from appropriated funds or access to federal funds.
AZ Assn. for Economic Development	Financial support from their members could be pursued
AZ Chamber Executives	Financial support unlikely
AZ Consulting Engineers Assn.	Endorsement possible - could be used to solicit member support
AZ Department of Transportation	As a government agency their financial support would come from appropriated funds or access to federal funds.
AZ Food Marketing Alliance	Direct approach to members could result in finical support
AZ State Senate	As a decision package of the universities general fund appropriations could be made
AZ Towing Association	Financial support unlikely
AZ Universities Consortium	As a government agency their financial support would come from appropriated funds or access to federal funds.

Bank of America	Financial support from corporation or foundation possible
Blue Cross & Blue Shield	Financial support from corporation or foundation possible
Board of Regents	As a decision package of the universities general fund appropriations could be made
Boeing Company	Financial support from corporation or foundation possible
Central Arizona Labor Council	Financial support unlikely
City of Glendale	Direct financial support unlikely, however, support could be generated for legislative appropriations
City of Phoenix	Direct financial support unlikely, however, support could be generated for legislative appropriations
City of Tucson	Direct financial support unlikely, however, support could be generated for legislative appropriations
City of Yuma	Direct financial support unlikely, however, support could be generated for legislative appropriations
GM Proving Grounds	Financial support unlikely
GPEC	Endorsement possible - could be used to solicit member support
Greater Flagstaff Econ. Council	Endorsement possible - could be used to solicit member support
Greater Phoenix Leadership Council	Financial support unlikely
GTEC	Endorsement possible - could be used to solicit member support
Habitat for Humanity	Financial support unlikely
House of Representatives	As a decision package of the universities general fund appropriations could be made
Intel	Financial support from corporation or foundation possible
Knight Transportation	Financial support for research on road construction only could be pursued
League of AZ Cities and Towns	Direct financial support unlikely, however, support could be generated for legislative appropriations
MAG	Direct financial support unlikely, however, support could be generated for legislative appropriations
Maricopa Community College District	Financial support unlikely
Mobil Oil Corporation	Financial support from corporation or foundation possible
NACOG	Direct financial support unlikely, however, support could be generated for legislative appropriations
NAU Faculty	As a government agency their financial support would come from appropriated funds or access to federal funds.
Phoenix Chamber of Commerce	Endorsement possible - could be used to solicit member support
Phoenix Suns	Financial support from corporation or charities possible
Pima Association of Gov'ts.	Direct financial support unlikely, however, support could be generated for legislative appropriations
Regional Public Transit Assn.	Direct financial support unlikely, however, support could be generated for legislative appropriations
Robson Communities	Financial support from corporation or foundation possible
Rural Metro	Financial support from corporation or foundation possible
So. Arizona Leadership Council	Endorsement possible - could be used to solicit member support
Southern AZ Homebuilders Assn.	Financial support unlikely

Southwest Gas	Financial support from corporation or foundation possible
Specialty Transportation Services, Inc.	Financial support for research on road construction only could be pursued
SRP	Financial support from corporation or foundation possible
Stardust Development	Financial support unlikely
State Legislature	As a decision package of the universities general fund appropriations could be made
Sun Cor	Financial support from corporation or foundation possible
Swift Transportation	Financial support for research on road construction only could be pursued
Toyota Proving Grounds	Financial support unlikely
Tucson Chamber	Endorsement possible - could be used to solicit member support
Tucson DOT	Financial support unlikely
U of A Faculty	As a government agency their financial support would come from appropriated funds or access to federal funds.
VIAD	Financial support unlikely
Waste Management	Financial support from corporation or foundation possible
Western States Petroleum Assn.	Financial support unlikely

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