

Review of the URS Preliminary Report on the proposed I-10 Bypass by Cascabel Working Group

Almost one year ago, the residents of the San Pedro River Valley between Benson and San Manuel became aware of a proposal for the Arizona Department of Transportation (ADOT) to investigate the feasibility of a new expressway/freeway that would bypass Tucson and Phoenix. From the outset it appeared that the favored route would be through the San Pedro River Valley. The report produced by URS, the consulting firm employed by ADOT to conduct this study, confirms our suspicions that the study would not be purely objective, but skewed to support the original suggestion of a route through the San Pedro River Valley.

Although the Cascabel Working Group has had neither the time nor the resources of ADOT and URS, we have studied the report carefully and have found both inaccuracies and inadequacies. In this document, we will put forth our opinions of the plan and explain why we think that planning for a new expressway through the San Pedro River Valley and/or the Aravaipa Wilderness should be terminated now.

To summarize our conclusions, we believe that

- the proposed new expressway will provide only very limited relief to congestion in either Tucson or Phoenix
- the cost estimates stated by URS are likely to be low by a considerable amount
- the energy costs to construct this expressway will be so large that there will never be any net savings of energy
- not only is no alternate route for I-10 needed, the proposed expressway would not be a suitable alternate route
- the population growth projections are seriously overstated and the growth in projected traffic is even less likely to occur
- the lack of good baseline traffic data makes even the forecasts stated questionable at best
- the full range of possible options for fulfilling the stated goal and needs has not been considered
- URS is merely rubber-stamping what they perceive the desires of ADOT and the State Transportation Board to be

In this review we will quote from various parts of the Executive Summary and the eight Working Papers that have been posted on the ADOT web site. References will be given in the following form [3-8] where 3 is the working paper number and 8 is the page number. If the quote is from the Executive Summary, it will be given as [ES-8]. The ordering of this review will be essentially in the order given by the URS papers.

Executive Summary

We begin with a hard look at the Purpose and Needs statement as given in [ES-2]. It is stated that the idea for a new corridor and expressway came from the State Transportation Board (STB) meeting in December 2006. Further, it implied that the concept for a corridor extending from I-10 west of Buckeye to I-10 near Casa Grande and continuing to I-10 near Willcox came from a newspaper article. The newspaper article, however, was merely reflecting the discussion held by the STB. That the final study supported the initial discussion without dissent is grounds for believing that the result was a foregone conclusion.

Nevertheless, a study was initiated to investigate the **Purpose**:

- To provide an additional high-capacity transportation corridor to accommodate travel across southern and central Arizona.

and from this a set of five **Needs** was formulated:

- Provide alternative route to I-10 to relieve traffic congestion on I-10 in the Phoenix and Tucson metropolitan areas.
- Provide a shorter, faster route through southern and central Arizona that will attract through trucks and other traffic from I-10.
- Provide a new route that offers an alternative path for I-10 traffic during construction, maintenance, and incidents.
- Provide a new transportation corridor to serve the expected rapid population growth and land development in the Sun Corridor.
- Develop a corridor that is context sensitive to environmental and social elements. The following is a brief description of the material covered in each chapter of the final report. The findings are summarized in Sections 2 through 5 of this Executive Summary.

We note, however, that only the first of these five needs is cited in the lead paragraph of the Executive Summary [ES-1]:

The I-10 Phoenix-Tucson Bypass Study was conceived to address existing and future traffic congestion in the two major metropolitan areas of Arizona. Arizona has been one of the fastest growing states in the nation for the past four decades, and most people believe this trend will continue. Traffic has increased even faster than the phenomenal population growth.

This paragraph makes it unambiguous that the main thrust of this study is to relieve traffic congestion and thereby makes it clear that the purpose should read “To find a way to relieve traffic congestion on I-10 in the Tucson and Phoenix metropolitan areas.” It also misstates a significant fact: traffic is **not** increasing faster than population growth. This is clearly demonstrated in Figure 1¹. Examination of this figure shows that down-

1. The traffic data in all of the following charts is courtesy of ADOT. The latest information available is for 2005, so that date will be used (except for one figure) for all of the discussions to follow.

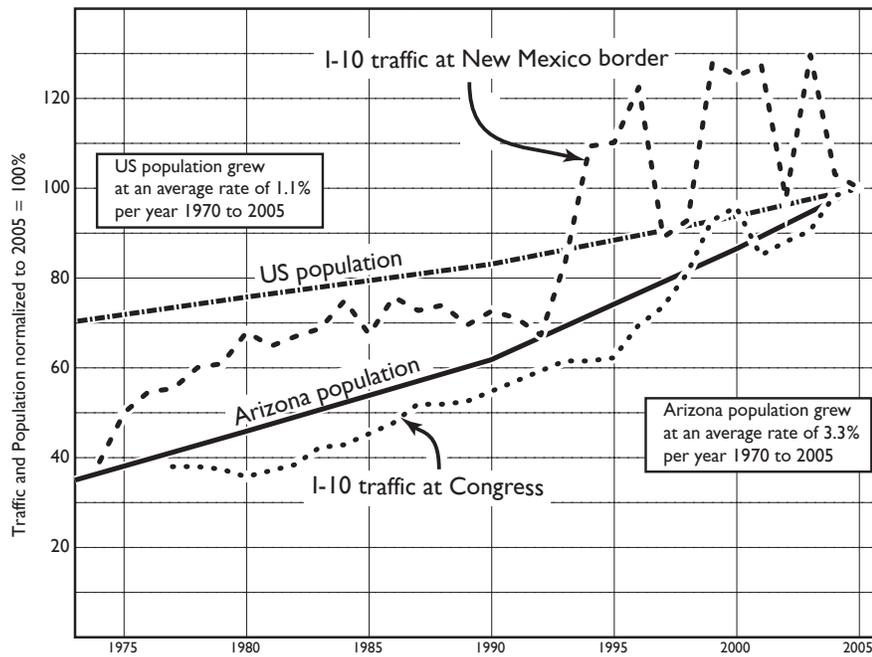


Figure 1: Traffic and Population History

town Tucson traffic on I-10 is growing at just about the rate that Arizona population is growing. On the other hand, traffic on I-10 at the New Mexico border is growing at just about the rate that the overall U S population is growing. This is reasonable as border traffic will be far more influenced by the much greater population outside the state than the population within the state.

At this point we would like to show exactly where traffic on I-10 occurs in Figure 2. It is very important to note that no bypass can possibly reduce local traffic by more than the total traffic at the point where the bypass begins. In fact, it is usually much less since not all of the traffic is destined for the other end of the bypass. For example, some of the New Mexico border traffic will surely end in Tucson, Nogales, Sierra Vista or other location short of Casa Grande. Thus, we note that the proposed expressway cannot reduce Tucson traffic by more than 8% and more likely by less than 5%. At first glance it might be thought that since California border traffic is somewhat greater than New Mexico border traffic, that a new expressway might reduce local traffic by that amount, but that simply cannot be the case, since we can see that the excess of California traffic over New Mexico traffic must have stopped somewhere in between.

The analysis on [ES-5] that suggests that Phoenix traffic could be relieved by 44,000 vehicles per day in 2030 and 97,000 vehicles per day in 2050 is therefore incorrect. Since we have shown that traffic historically has not increased faster than population, even if we accept (which we do not) that Arizona population will increase threefold by 2050, this would be more than 100% of the California traffic and much greater than the New Mexico traffic.

Similarly, the estimation of reduction in Tucson traffic is highly optimistic [ES-8] in that it would require significantly more than half of the projected traffic at the New Mexico border to use the new route.

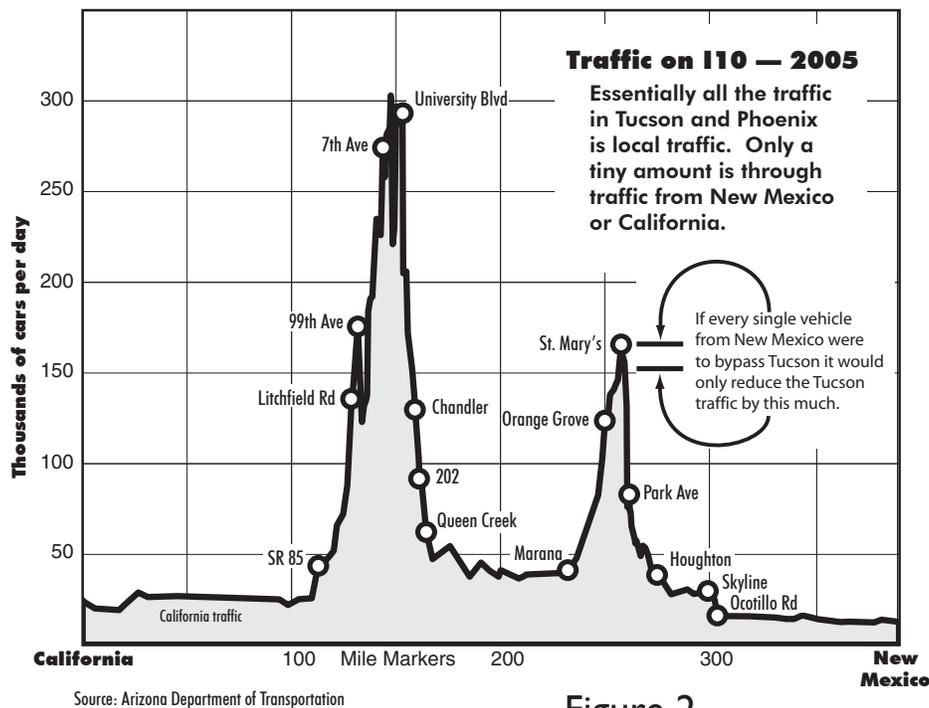


Figure 2

The report makes the claim that the route through Tucson cannot be expanded past the current plans for I-10 widening. This is also not correct. Perhaps there can be no more lanes on a single level, but numerous cities have either constructed double-deck expressways or are in the process of so doing. Other state Departments of Transportation are either using or considering double-decking as noted in this quote from a Georgia DOT engineer:

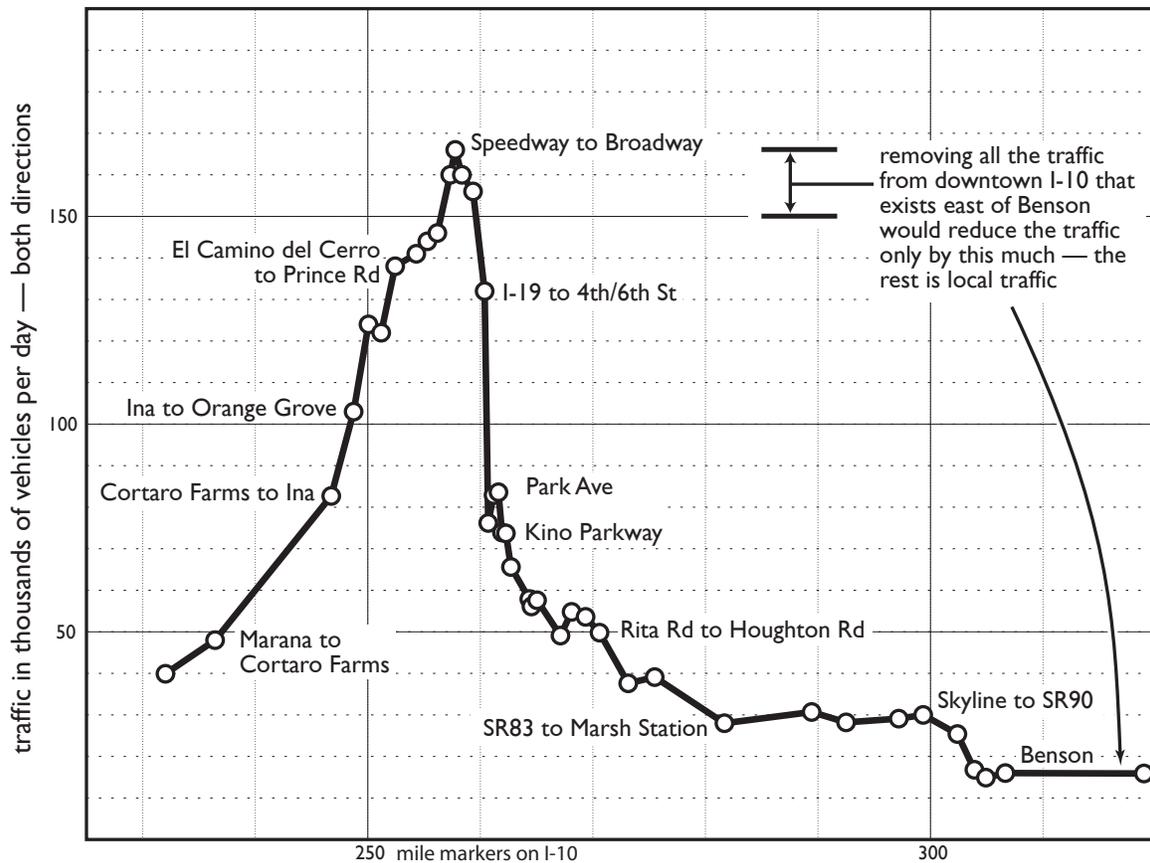
“Building elevated lanes would minimize both the high cost and the time required to buy right of way, as well as reduce the displacement of residents and businesses along the route. The cost of acquiring land often equals -- and can far exceed -- construction costs in urban highway projects.

“Other cities with double-decked roads built or under consideration include Austin, Houston and San Antonio, Texas; Birmingham, Ala.; Los Angeles; New York; Seattle; St. Louis; Tampa, Fla., and densely populated areas in Europe and Japan.

“Right-of-way acquisition aside, the actual construction price tag for such elevated highways is typically three to four times that of those built on the surface. It is unclear whether overhead lanes would be cheaper on I-285; both right-of-way prices and costs for asphalt, concrete and steel are soaring.”²

A second deck on an expressway is no more than a rather long bridge with no long spans. There are several places along I-10 that are already constructed in this fashion because of the need to pass through marshy terrain or over shallow bodies of water. The technology is well understood. To estimate the possible length of a needed second deck, we look at Figure 3. It is clear that the traffic in Tucson is local traffic, not long distance

2. Atlanta Business Chronicle, Friday, May 26, 2006



Source: ADOT

Figure 3: Traffic on I10 in Tucson Area

through traffic. If the need is to cut congestion in the downtown area, then the focus should be on that segment of I-10.

A second deck from Prince Road to the Benson Highway exit would be approximately 7 miles long and would do much more to relieve Tucson congestion than the proposed 150 mile expressway from Willcox to Casa Grande. Since the number of lanes would be essentially doubled, the traffic per lane would be cut in half, not reduced by 7%. Surely this would be a more cost effective solution.

A Shorter, Faster Route

The URS study identified only one route in the western segment. This route is estimated to be 10 miles shorter than the current 100 mile route. This very modest 10% saving would be gained at enormous expense. Even if the cost estimates provided (which we also question) are correct, the cost per mile saved does not appear to be justifiable in the least.

The eastern segment has identified four possible routes, one of which (actually longer than the current route) has now been ruled out. The other three routes are stated as saving 5-10% of the approximately 140 miles of the current route. This is even less of a saving than the western segment. The mileage savings alone are not likely to attract any significant amount of traffic away from the existing route.

An Alternate Route

One of the stated needs is for an alternate route for use during traffic incidents or construction. In the entire length of I-10 from California to the Atlantic coast there are hardly any alternate routes. Yet historically there have been very few closures of a duration that would require or even allow activation of an alternate route. In fact, there is at this moment a major construction project on I-10 that seems to be handled very well — the widening of I-10 in downtown Tucson, a segment with very heavy traffic. It has been claimed that Tucson is the largest metropolitan area on I-10 with no alternate route, but that is not the case. El Paso, Texas has no bypass but has a population that exceeds Tucson. There are a number of other metro areas whose population is nearly that of Tucson with no alternate routes. An alternate route is simply unnecessary.

A planning manual for alternate routes notes that alternate routes are more often needed in metro areas than in rural areas since that is where traffic problems most often occur. It also notes that rural traffic issues are usually solved by routing traffic from the obstructed lanes to lanes normally going in the opposite direction.

No evidence was introduced in the URS report to indicate any need for an alternate route to I-10, such as the frequency and length of closures of either I-10 or any other of the Interstate Highways.

Serve the Expected Growth in the Sun Corridor

The population growth figures for Arizona appear to be generated from a simple extrapolation of the growth over the last few decades. As noted earlier, this growth has been approximately 3% per year which would indeed project a population of 16 million in 2050. The reasons why this might not happen, however, are manifold. The first item is that growth at this rate, especially continued growth, is a historical anomaly. The only state to have tripled its population in 43 years is California, and that was largely due to the massive population movements in World War II. Florida has come close. To date, the only state that has achieved the fame of being the fastest growing state for two decades consecutively is Nevada. Arizona might make that or might not.

Others³ have issued forecasts that are smaller than those projected by MAG:

Arizona's projected population in 2050 could range anywhere from about 10 million residents to about 14.3 million. The 4.3 million person difference between these extremes depends on whether policies aimed at immigration stability are adopted or, instead, currently advocated policies that would accommodate today's illegal alien population, allow a new stream of guest workers and increase legal immigration are adopted.

Without any change in immigration policy or enforcement, i.e., with the current trend in large-scale legal and illegal immigration, the state's population is likely to increase from today's about 6 million residents to around 12.1 to 12.5 million persons in 2050 - an increase of 103 to 109 percent.

A major question that no one seems to address is the question of water. Our research indicates that with the current population of less than 6 million, the water resources of Arizona are oversubscribed. Central Arizona Project (CAP) water from the Colorado River is fully accounted for and the ground water table is dropping

3. Federation for Immigration Reform <<http://www.fairus.org>>

like a stone in many places. What water is available is not available where we might like it to be — in the Phoenix and Tucson areas and the area in between.

A secondary question that does not seem to be answered in any of the documents our group has seen is what kind of economic activity will be needed to sustain a population of this size. We know that the population of some northern states (called “rust-belt” states) is dropping as people move away in search of jobs. What sort of jobs will be available to the next 10 million people who may want to move to Arizona?

Some of the projections we have seen are clearly the product of “boosterism.” Our point is simply that one should not commit large amounts of money based upon wishful thinking or over-optimism. The statement that “The Sun Corridor is one of a dozen future mega-metropolitan areas identified in the United States and could stretch from Prescott to Sierra Vista” is one such unsubstantiated overly optimistic view.

Develop a Corridor that Is Context Sensitive to Environmental and Social Elements

It is in this area that the report is most deficient. The report does give a certain amount of lip-service to the idea that a new corridor should be sensitive to environmental and social issues, but fails to follow through in any convincing way. It is interesting to note that in their discussion of “stakeholders” they do not seem to believe that the residents and/or land owners are stakeholders. If they have no stake in this, who does? We note also with despair that in the interviews with various governmental officials, more credence is given to bureaucrats and other functionaries than to elected officials. This cannot be right as non-elected employees do not directly represent the people.

FINDINGS

According to the URS report:

The determination of need for the project is based on the Purpose and Need Statement. The following summarizes the findings of this study regarding the need. The discussion is separated into a West Segment (Buckeye to Casa Grande) and an East Segment (Casa Grande to Willcox). [ES-5]

The focus of the Cascabel Working Group is on the eastern segment of the proposed expressway. Since we have had limited time and resources, we will not comment further on the West Segment and will leave that up to others who are better informed. In connection with the East Segment, URS writes the following:

The East Segment would extend from I-10 in Casa Grande to I-10 near Willcox. Of the several alternative corridors shown in Figure E.1, Corridor F1 would connect to I-10 north of Casa Grande while Corridor G would be more or less a direct eastward extension of I-8 and Corridor E1 would connect with I-10 in Eloy. If F1 were chosen as the corridor, then Corridors C1 and C2 would also have to be chosen and constructed to provide a continuous bypass. [ES-7]

In a nutshell, URS reduced their consideration to four routes, one south and west of Tucson that would go up through the Avra Valley, one departing east of Willcox going through Aravaipa, and two routes going west from Willcox and up the San Pedro River Valley. We understand that since the report was issued, URS and

ADOT have concluded that the route through Avra Valley is not feasible, and that only the three routes east and north of Tucson are still in consideration. URS then considers whether these routes would meet the stated needs.

Relieve Traffic Congestion in Tucson: Traffic volumes on I-10 through Tucson in 2005 exceed 150,000 vpd. Forecasts by PAG indicate that traffic demand on I-10 in 2030 could exceed 300,000 vpd. ADOT is constructing or has plans to build four lanes in each direction through Tucson. That is the maximum number of lanes that can fit within the very confined right-of-way. Since the estimated capacity of an eight-lane freeway is 196,000 vpd, some relief to the future traffic is needed. [ES-7]

The potential traffic reduction in Tucson in 2030 and 2050 is shown in Table E-2. Routes 1, 2, or 3 would reduce traffic on I-10 by 14,500 vpd in 2030 and 20,000 vpd in 2050. This volume equates to approximately 0.3 lanes in each direction in 2030 and 0.4 lanes in each direction in 2050. The reduction in traffic amounts to 7% to 10% of the planned roadway capacity (196,000 vpd). This reduction would help relieve congestion in Tucson by a modest amount. [ES-8]

It is clear at this point that the eastern routes will not relieve the traffic problem in Tucson in any serious way. Assuming that the carrying capacity of the widened I-10 in downtown Tucson is capable of carrying only 196,000 vpd out of the PAG forecasted 300,000 vpd in 2030, the estimated reduction of 14,500 vpd due to the new proposed expressway will in no way alleviate this congestion. The expenditure of billions to **not** solve the problem is not prudent.

The URS report alludes to the traffic entering Tucson from I-19 but provides no data or analysis. In order to complete this picture, we will introduce some evidence. Consider Figure 4.

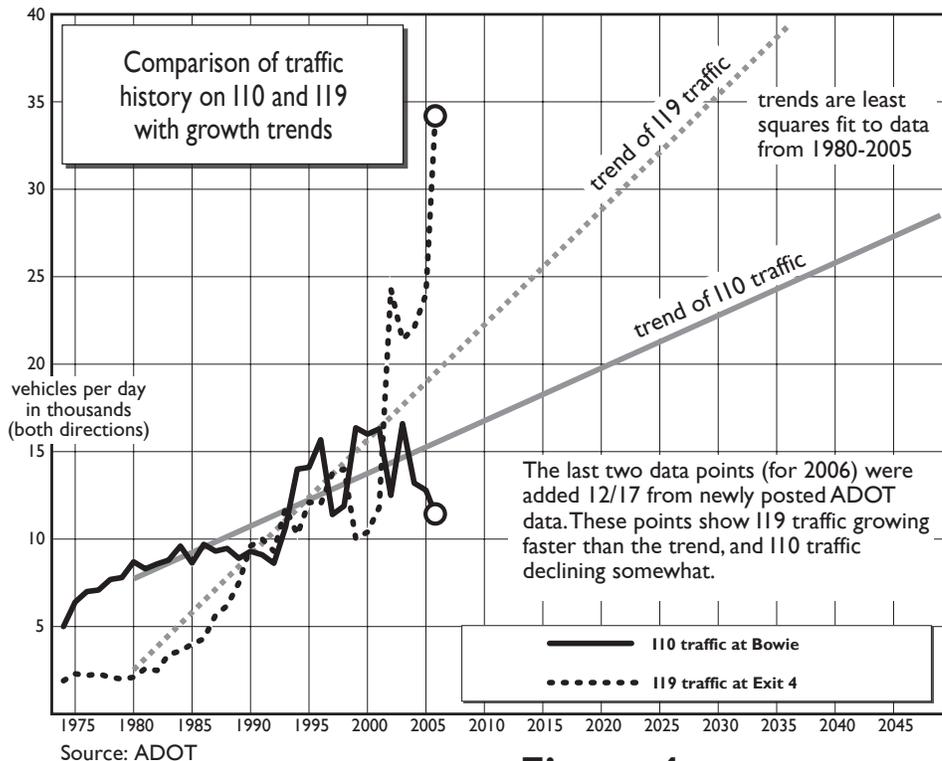


Figure 4

In this chart it is obvious that traffic from I-19 is increasing much faster than I-10 traffic. Substantially, all I-19 traffic passes through or near downtown Tucson and would not be reduced by the proposed expressway through either the San Pedro River Valley or through Aravaipa. We do not question the need to alleviate congestion in Tucson. We do question the proposition that the routes suggested by the STB and supported by URS would provide anything remotely resembling a solution.

Provide a Shorter, Faster Route: Table E-3 provides comparative data on distances and travel time for I-10 (in 2030) and for the four route alternatives used in this summary evaluation. Routes 1, 2, and 3 would provide a shorter and quicker route than existing I-10. Distance savings range from 6 to 15 miles and the time savings would approximately 13 to 17 minutes in the off- peak hours and 33 to 36 minutes in the peak hours. The shorter, faster routes will attract through traffic from I-10, including many large trucks that have no destination in the Tucson area. The distance and time savings can help to reduce the cost of goods and services as well as benefiting all motorists on the new bypass and those that remain on I-10 because of the reduced congestion. [ES-9]

This statement calls for a number of dubious assumptions. The most important is that a large proportion of the vehicles have no need to stop in Tucson (or Nogales or Sierra Vista, etc). In fact, there is no data available to support this proposition. Although URS makes some assumptions in their report, the facts can only be obtained through origin-destination data. Our group has been told that ADOT does not collect such information. We are further told that ADOT does not collect this information because they have been advised by the Attorney General's office that it is illegal to do so. However, we have been unable to confirm this with the Attorney General's office. This casts a another cloud of doubt over the entire URS report.

Another need expounded on in the report is that of an alternate route:

Provide an Alternative Route to I-10: Currently there are no alternative routes to I-10 through southern Arizona. Traffic incidents or construction can create untenable situations on this essential lifeline for Tucson and Phoenix and much of the Southwest. The potential bypass routes would provide an alternative route to I-10. With appropriate traveler information systems, motorists could choose the alternative route if there are unfavorable conditions on I-10 even if they might have otherwise chosen to stay on I-10. Routes 1, 2, and 3 require motorists to make the route decision near Casa Grande for eastbound travelers and near Willcox for westbound travelers. As a result, the alternative route would only apply to long distance and through trips. [ES-10]

Alternative routes are indeed desirable, but they are like insurance policies. They must return a potential benefit greater than the cost. This is clearly not the case here. As we noted earlier, I-10 is currently undergoing a major construction project without causing undue congestion. Any insurance plan must be based on sound statistics, and we are provided none. We have no idea what frequency or duration of closures of I-10 there might be. Over the 40 year history of I-10, closures of more than a few hours seem to be exceedingly rare but we have no detailed data. And as URS fairly notes, this alternate would only apply to long distance and through trips. We believe the expenditure of billions for this reason is not prudent either.

Serve the Expected Growth in the Sun Corridor:

Population in Arizona is projected to increase from 6.2 million in 2006 to 10.3 million in 2030. Population forecasts for 2050 range from 12.8 million to 16 million. The five-county study area (Maricopa, Pinal, Pima, Cochise, and Graham) includes about 83% of the current population of the state and is projected to contain 85% in the future. Pinal County is expected to be the fastest growing on a percentage basis and could have an urban area comprised of the cities of Maricopa, Casa Grande, Coolidge, Eloy, and Florence that could exceed the population of the current Tucson Metropolitan Area. Preservation of corridors through this area is very important to the long-term viability of this growing area.

Most of the growth is currently expected to occur west of SR 79 in Pinal County. Routes 1, 2, and 3 would provide an east-west corridor that could be part of the major highway plan for the area. Route 4 would pass through more of the area expected to develop and thus may serve a greater need in Pinal County. [ES-11]

We have commented on the tenuous nature of population forecasts, but even if correct, the assumption that an east-west corridor is needed is not. If the past shows us anything, it is that new populations want to be connected to the nearest metropolitan area, not to a distant area with no significant population. In this case, people living in Casa Grande are much more likely to want a new expressway to Tucson or Phoenix than one to Willcox or Buckeye. Planning for this is much more important than the proposal at hand.

And then we come to the most egregious case of over simplification in the entire report:

Develop a Corridor that Is Context Sensitive to Environmental and Social Elements: The eastern end of Routes 1, 2, and 3 is comprised of Sections F3, M1, L, K1, and K2. All of these sections are near areas that have numerous environmentally sensitive properties. The corridors have been identified to avoid encroaching on any of the protected lands, but the corridors are in general proximity to several national forests, wilderness areas, areas of critical environmental concern, and areas set aside for preservation of wetlands and riparian habitat. Some stakeholder agencies have expressed great concern regarding the potential impact that a new highway would have primarily due to the potential inducement of urban development that could compete for the groundwater supply in the river watersheds that makes the area unique and valuable as a natural preserve. The concern is primarily directed at the San Pedro Valley and to a somewhat lesser extent the Aravaipa Valley. [ES-11]

This statement gives short shrift to the numerous objections presented by residents and land owners in this area. Finding anyone in the Cochise County area that is in favor of this proposal is, in fact, very difficult. We note proudly that many elected officials, such as the Cochise County Board of Supervisors, have gone on record as being opposed to any expressway through this sensitive area. It must be obvious that any major project of this type would require a full Environmental Impact Statement that would be subject to the most extreme scrutiny by a number of environmental and other groups.

The routes through these areas would need to accommodate wildlife crossings, preservation of native vegetation, and incorporate design features that enhance the area and make the roadway compatible with its surroundings.

As you must know, wildlife crossings have often been found to be inadequate to properly protect wildlife. This is currently the subject of much controversy. Similarly the preservation of an important riparian area is likely to be an extremely difficult and expensive undertaking if it can be accomplished at all.

We also find no mention of preservation of the archeological record in the San Pedro or Aravaipa Valleys. It is well known that this area has been settled for 12,000 years, but has never been fully explored. When questioned URS indicated that every effort would be made to circumvent archeological sites. We are compelled to note that they can avoid only those sites that they know about.

Minimizing the potential of urban development in the most sensitive areas would need to be addressed. Selection of interchange locations would be the most critical element. Since the corridors mostly pass through State Trust Lands, extensive coordination with the Arizona State Land Department would be needed. [ES-11]

Clearly the potential for urban development that would totally destroy the nature of this area is profound. It is difficult to see how urban development can conceivably be avoided. Development always follows access routes, and this will be no different. Such sprawl as would be a natural consequence of a new expressway would not only cause environmental damage, but would probably cause economic damage as well.

Section M1 of Route 1 would pass through approximately 14 miles of rugged mountainous terrain. Currently, this area is only accessible by four-wheel-drive vehicles. In the middle of the section, those jeep trails are difficult to use by any vehicle. Design of a roadway through this area will require exceptional effort to minimize impacts and create a pleasing roadway that does not create an unreparable scar on the landscape. If properly designed, the roadway would provide a very scenic drive for motorists. [ES-12]

The last line of this paragraph suggests that one of the purposes of the new expressway would be to provide a pleasant driving experience for motorists, but that it would also add to the cost. If a scenic drive is needed, then it should be one of the stated aims, not slipped in the side door.

The URS report then considers feasibility:

The several corridor alternatives were evaluated to determine feasibility based on avoidance of protected environmental areas, engineering challenges, benefit/cost, and public/stakeholder acceptance. Based on the preliminary assessment made as part of this study, there are several corridors that appear to be feasible. [ES-12]

The corridors URS claims to be feasible are the ones through the San Pedro River Valley and Aravaipa. However, they are being somewhat disingenuous when they state that they base this on avoidance of protected environmental areas, engineering challenges, benefit/cost, and public/stakeholder acceptance. For example, their notion of avoidance of protected environmental areas is a legalistic one in that they are avoiding *formally designated* protected areas. It is by no means clear that they are avoiding sensitive areas that perhaps should be designated as protected.

The engineering challenges referred to have been looked at in only the most superficial way. Even considering that this is a preliminary report, this look has been inadequate as any resident of the western slope of the Galios can testify. Perhaps URS has not actually seen what can happen during a heavy monsoon season.

As far as our group can tell, no benefit/cost study has been done whatsoever. The “benefits” referred to are the reduction in traffic in the metro areas for the most part, but there has been no attempt to reduce these to monetary terms. The costs, on the other hand, look to us to have been seriously underestimated. The past history of major highway projects would clearly support our view on that.

And as to public/stakeholder acceptance, there seems to be none — at least in northwest corner of Cochise County that would be most impacted by this project.

All of the corridors appear to offer routes that can be engineered and constructed. [E-12]

Yes, but at what cost. The estimates given in this report are not sufficiently detailed to make an assessment of their accuracy. We do note, however, that their estimates do not agree with other studies of similar projects.

There has been considerable stakeholder opposition to Routes 1, 2, and 3 due to the proximity to environmentally sensitive areas and concern that a new highway would attract urban development. The areas are unique due to the riparian habitats along the San Pedro River and Aravaipa Creek. Urban development would probably draw groundwater that is a critical part of the watersheds of these two flowing streams and, therefore, could jeopardize years of effort to protect the water sources for restoration and conservation of these rivers. [ES-13]

“Proximity to environmentally sensitive areas” understates the issue. All of these routes go **through** environmentally sensitive areas. This problem cannot be made to go away.

Routes 1, 2, and 3 pass through areas that are surrounded by mountain ranges that are in the Coronado National Forest. The valleys are generally undeveloped and are mostly State Trust Lands. As a result, a vast sparsely populated area is created that provides habitat for many large mammals, numerous bird and fish species (some federally protected species), and some unique native grasslands. Some stakeholders wish to retain this area as a large undeveloped “preserve” and have the opinion that all growth should take place in the existing major urban areas. [ES-13]

Again, this is an attempt to minimize the impact that a major expressway would have, and a try at claiming that all opposed to this project are in the “no growth” camp. This is simply not true. Many of those opposed just don’t want an expressway here when there are other, better, options.

On the other hand, much of the developable land is State Trust Land which is to provide the maximum financial return to benefit the public education system. Should, or can, all of this land be protected and left undeveloped? There may be long-term benefits to Arizona of providing economic stimulus to existing small communities near the corridors and even development of new small communities. The new communities could give people an opportunity to live near major preserved areas such as the national forests. [ES-13]

Perhaps the truth is leaking out. This is really an attempt to open State Trust Lands to development. If this is the objective, then it should be put forth honestly and not hidden behind the cloak of relieving traffic in Tucson.

Decisions about where growth should take place are well beyond what can be addressed in this study. Since currently there are no adopted land use plans that include urban development in eastern Pinal County or in the more sensitive areas of Routes 1, 2, and 3, it is reasonable to assume that urban development in those areas is not desired. Such plans can change in the future. If a new highway corridor were to be proposed, local jurisdictions and counties may view the corridor areas in a different light. [ES-13]

In short, are we prepared to destroy an environmental gem on the altar of growth and development? Our group would like to remind the STB that Benson rejected a major development not so long ago because it was believed that it would be damaging to both the environment and the way of life of the residents of the area. It is not preordained that local jurisdictions and counties will jump on the bandwagon of growth.

The URS report turns to road cross-sections and cost estimates:

The order of magnitude cost estimates for the entire 250 mile corridor alternatives range between \$6 and \$8 billion. The east segment (150+ miles) would cost \$2 to \$3 billion. The lower cost per mile for the East Segment compared to the West Segment is due to rural conditions instead of urban which results in fewer interchanges per mile, less expensive interchanges, and two lanes each direction instead of three. [ES-14]

The numbers are at variance with the experience of other Departments of Transportation. In particular, in 2004 the Washington Department of Transportation conducted an extensive study of expressway construction over the preceding decade. Without going into more detail than URS has provided, our estimate based on 4 lanes for the entire distance is \$9 billion or more. Given that currently the cost of steel, asphalt, and concrete is going up twice as fast as inflation, this will surely be too low a number. According to the American Road & Transportation Builders Association, highway construction cost rose by 7.8% from 2006 to 2007 while general inflation was 3.5%.

And URS comments on funding:

The bypass cannot be constructed with current funding levels. The federal and state fuel tax rates have not been increased for almost 15 years, and the receipts have been increasing at a slower rate than traffic increases due to more fuel-efficient vehicles and some alternative fuel usage. Construction cost increases have far outstripped any highway user fund increases. As a result, recent projections indicate that the Federal Highway Trust Fund could be approximately \$4 billion in the red by 2009. It would take a 10-cent increase in both the federal fuel tax (assuming Arizona continues to get its current percentage) and the Arizona fuel tax and to devote the entire amount of both increases to construct the complete bypass.

The bypass might be built as a toll road. Very preliminary estimates indicate that it may be difficult to fund the full amount through tolls because traffic volumes are sensitive to tolling rates. The trucking association has indicated opposition to toll roads. [ES-14]

This is a correct conclusion about funding, but tends to understate the magnitude of the problem.

And URS has provided some conclusions: [ES-14] some of which are not controversial but some of which are clearly erroneous:

a. Stakeholders and the public emphasized the most pressing need is to widen and improve I-10 to the maximum extend reasonable, complete the SR 85/I-8 bypass, build the planned freeway system in the greater Phoenix Metropolitan Area, widen and improve US 60/US 70 from Apache Junction to Saford. [ES-14]

True

b. The expected continued rapid growth in Arizona will place a huge burden on the state's highway system. The emerging Sun Corridor is projected to be home to 10 million or more residents over the next few decades. Identification and preservation of future transportation corridors to serve this megametropolitan area is essential to the livability of the area and its economic vitality.

True

c. Based upon this preliminary assessment, there appears to be a need for an I-10 bypass. Several alternative corridors have been identified that would offer some relief to traffic congestion in the Phoenix and Tucson metropolitan areas, would provide a shorter and faster route, would provide an alternative route to I-10, and would serve the rapidly developing Sun Corridor.

False — We have shown that the proposed Bypass/Expressway would not only not accomplish the objective of cutting down on congestion in metro areas, but would be of no help to the central Sun Corridor area between Tucson and Phoenix. It would be only trivially shorter and faster than the current route, and would not be a suitable alternative route.

d. All potential I-10 bypass corridors must pass through central Pinal County where substantial growth is taking place. Large blocks of land have already been approved for development or "entitled." Preservation of a corridor through this area should be of very high importance.

Misleading — Conversations with both members of the public and elected officials of Pinal County suggest that any support for the proposed expressway is simply because a) they would like to have a better east-west highway across Pinal County, and b) would like to promote economic growth. When one official was asked whether or not he would rather have a good, ordinary highway from Mammoth to Casa Grande, he replied, "Absolutely".

e. All identified alternative corridors appear feasible and can be located so that none would encroach on any currently preserved lands. Those corridors that would pass through the San Pedro Valley or the

Aravaipa Valley would be opposed by very organized and vocal groups that want these valleys to remain largely undeveloped to preserve the ground water sources for these streams.

False — Feasible, yes. Reasonable, no. We have noted that the routes would not encroach on *currently preserved* land, but that does not mean that the routes do not encroach on land that should be preserved. But it is definitely true, that any routes through the San Pedro or Aravaipa Valleys will be strenuously opposed.

f. Due to the proximity of the potential corridors to large preserved lands, roadways would need to be designed using context sensitive elements to accommodate wildlife crossings where needed and to incorporate aesthetic treatments that help to blend the roadways into the existing environment.

Misleading — We believe it unlikely that damage to the environment, flora, fauna, archeological sites, esthetics, air or water can be avoided. We call this misleading since in the report there is the clear implication that such damage can be avoided.

g. Much of the potential corridors would be on State Trust Land. Early coordination with the State Land Department will be needed.

True

h. Major expansions of existing transportation funding sources and new funding sources are needed to meet the needs in Arizona and particularly to construct a new 250-mile new highway.

True

Additional Commentary on Working Papers

There are other issues sprinkled throughout the working papers that deserve comment. For instance, in working paper 1 the following appeared:

In December 2006, the idea of an I-10 bypass was first discussed informally by the State Transportation Board. A newspaper article appeared in the Arizona Daily Star that reported on this meeting and suggested a bypass route that would depart from I-10 between Willcox and Benson, cross I-10 in the vicinity of Casa Grande, and rejoin I-10 west of State Route (SR) 85. Such a corridor could offer a shorter, faster route that would divert through traffic, including truck traffic, out of Tucson and Phoenix and thereby offer some congestion relief in these metropolitan areas. [1-1]

This makes it appear that the routing suggested to the study group (ADOT Planning Department and URS) was the result of a newspaper article. However, the minutes from the December meeting clearly show that a) the route through the San Pedro River Valley was preferred and b) options for improving I-10 through Tucson were off the table:

The Tucson area of I-10 traverses the largest urban area along the entire I-10 corridor from Florida to California from east to west that has no viable bypass or alternate route. The route I'm suggesting we study came up in my discussions with the district engineer and I believe Greg has discussed it with others as well. I've also discussed it with other transportation experts, both public and private in our area.

We have previously considered a portion of this alignment as an alternate I-10 route. It is called Route 76. It would take off some point between Willcox and Benson, tag north and then west. It would go around the lines and around the mountains. It would link with a road known as Park Link Road. It would then cross I-10 and run parallel to I-10 until I-10 meets I-8 and then across west, hang a little north and link up with I-10 west of Buckeye. That route would bypass both Tucson and the Phoenix metropolitan areas.

The reference to Route 76 is to a proposed highway through the San Pedro River Valley 30 some odd years ago that was subsequently abandoned as being too costly for the benefits to be gained. And since the preferred route was predetermined, it is also true that consideration of other local options for Tucson traffic were being ruled out:

There are other options that have been considered especially with respect to the overlook which is now going on I-17. A second level express level stacked on top of the existing freeway. From my experiences in Tucson, I think that is a non-starter. There are other corridors which are theoretically available, such as going into the river and building something along there. Experience also teaches that that is a most definite non-starter. In examining what other alternatives there may be and in discussions with district engineer Greg Gentsch, there is something which had been talked about many years ago, at least to some extent, and that is bypassing both Tucson, which was studied a number of years ago and Phoenix, which I'm not sure of had been studied, to create a road, to go around Metropolitan Tucson and around Metropolitan Phoenix. There are maps which Greg has produced for us which show that route. Basically, it would avoid the Tucson Metropolitan Phoenix areas.

In other words, the conclusion that URS was expected to reach was cast in highway grade concrete even if not explicitly stated. It is hardly surprising that the result came out that way, but it does undermine any credibility that URS might have to be totally objective.

Working paper 1 provides some additional projections of population, but nowhere is the methodology of these projections explained. Given the considerations mentioned earlier of water resources, economic activity, and global warming, all these projections must be considered suspect. Since this project is very expensive, wouldn't it be better to stand back for awhile to see how the population really does grow?

Traffic studies

Although it is minor quibble for this issue, working paper 2 reports that truck traffic in downtown Tucson is 21% of the traffic. Our group was told by an ADOT staffer that this information is collected only by inference, namely the length of vehicles, but that in any case, it is approximately 9% of the traffic at Congress Ave.

This is a good point to note that for planning purposes, ADOT statistics leave much to be desired. No time of day statistics, day of week statistics, seasonal statistics, or even directional statistics are available. Even more

surprising, no ramp data is collected. All of these are really needed to determine what the effect would be of a) more lanes, b) more (or fewer) exits and entrances, c) or alternate routes. We have previously mentioned the lack of origin-destination information. These statistics are essential if accurate planning is to be accomplished.

The URS report attempts to recreate origin-destination information by techniques which other DOTs have found to be inaccurate. We do not fault them for using these techniques as they are the only ones available. We do fault them for not pointing out their lack of accuracy.

Working Paper 2

In working paper 2, URS mentions a number of other studies that are underway. However, they provide only a very brief statement of what they are and no information about how they might interact with the expressway proposed here.

One of the studies does mention that I-10 crosses Indian land on a perpetual easement. One wonders then why Indian Land is considered to be a fatal flaw for a route in this study. Surely if it were made economically advantageous to a tribe, an easement could be obtained.

An even more puzzling omission is that there is no serious discussion of CANAMEX⁴. The report claims that SR85 is a designated component of this route, but the official CANAMEX web site says that the route is to follow I-19 from Nogales to Tucson, I-10 from Tucson to Phoenix, US93 from Phoenix to Nevada, and I-15 from Nevada to the Canadian border.

Working Paper 3

Stakeholder/Public Opinion

In working paper 3, there are a number of charts of stakeholder opinions and some expressions of public response. With all due respect, these are terribly biased in favor of this project. We have already noted, as an example, that Cochise County is recorded as being in favor. This is definitely not the case. The County Supervisors have unanimously gone on the record as being opposed. We have no idea how many other entries in this table are in error, but have reason to believe that several are.

We have also been advised that all public opinion entered electronically at the ADOT web site after the first round of public hearings was lost. Based on statements from interested citizens at the public meeting, we have every reason to believe that the participants were opposed on the basis of 20 to 1.

This seals our belief that the outcome of this study was predetermined.

4. CANAMEX is a federal program (Public Law 104-59, November 28, 1995) for a major corridor from Mexico to Canada. So far it appears to be only in the the planning stage. Nothing has happened since 2004.

Working Paper 4

Environmental

Working paper 4 is devoted to a few environmental issues. The tables that are contained in this paper are clear evidence of the sensitivity of this area. Other than identifying officially “protected” lands, there is little new information. We again note that the word “archeology” does not appear in this document.

Working paper 5

Working paper 5 is further devoted to expounding traffic studies. We have already noted the deficiencies but the best line is the last sentence in this paper:

It must be stressed that this is a sketch planning technique! More accurate results would be obtained from a travel demand model.

Truer words were never spoken.

Working paper 6

Economics

Working paper 6 consists of a drawing of a typical expressway cross section and some quick cost estimates. As we noted earlier in this paper, we believe their cost estimates to be low — significantly low. Admittedly, this is only a preliminary study, and URS was not expected to actually propose a detailed route and base its cost estimates on that. However, it is misleading to the STB to low-ball the likely costs.

Earlier we referenced a study by the Washington Department of Transportation in 2004. WDOT examined carefully 36 projects. These ranged from simple widening projects to the Big Dig in Boston. The cost of these projects varied from just over \$1 million per lane mile (for a simple widening project in which no land was acquired and no new bridges or interchanges were required) to the Big Dig which came in at \$188 million per lane mile.

In all, 13 of the 36 projects studied by WDOT cost more than \$10 million per lane mile. They found the biggest factors in variations in costs per lane mile to be:

- Structures and interchanges: Projects that have structures and interchanges have a much higher cost per lane mile.
- Right of way: If a project can be built within existing right of way, then its cost per lane mile is much less than a project that needs additional right of way.
- Environmental impacts: Mitigation costs for environmental impacts can have a dramatic affect on

cost per lane mile.

- Soil and site conditions: Difficult geologic and topographic conditions have a significant impact on the cost per lane mile.

After examining these projects, we believe that a figure of \$10 million per lane mile is a reasonable estimate for the proposed I-10 Bypass through the San Pedro River Valley. It is also to be noted that the WDOT study was done in 2004 of projects that either had been completed or were nearly completed at that time, and there has been significant inflation in highway construction costs since then.

Although no specific route has been selected, the shortest of several routes through the San Pedro River Valley in this study is about 225 miles. Using that as a parameter, the 900 lane miles would then be expected to cost \$9.0 billion if constructed in 2007. For construction in later years, some allowance should be made for inflation.

The interest cost on \$9.0 billion is \$405,000,000 per year at the current 10 year T-bill rate of 4.5%. Using 10,000 vehicles per day, or about 3,600,000 vehicles per year, the interest cost per vehicle is \$112. If this were a toll road, surely no one would use it. And, of course, this annual cost does not include maintenance and police patrolling.

Energy

It is claimed that the proposed new expressway, being shorter than the current route would attract both cars and trucks and would save energy. In this section, we examine that claim. The current route as given by URS is 250 miles. The shortest proposed route would save approximately 25 miles. The other two routes still on the table would save somewhat less. For calculation purposes, however, we will take the mileage saving as 25 miles.

If this is the mileage saving, the energy savings are as out of line as the financial ones. One study determined the energy requirements basically as follows: For each \$1B of construction cost, 10^{13} (10 trillion) BTUs are expended. The majority of this energy is in the preparation of the materials used in the construction.

Conversion of this energy to gasoline is done with the following equivalences:

$$131,850,000 \text{ joules} = 125,000 \text{ BTUs} = 3.785 \text{ liters of gasoline} = 1 \text{ gallon of gasoline}$$

Since we estimate the bypass will cost \$9B or more:

$$\$9.0\text{B} = 9.0 \times 10^{13} \text{ BTUs} = 720,000,000 \text{ gallons of gasoline}$$

If 10,000 vehicles per day take the bypass, of which 5,000 are heavy trucks and 5,000 are passenger cars, we can compute the energy savings. Passenger cars average 25 mpg and trucks average 5 mpg. If the distance saved is 25 miles on each trip, each car saves 1 gallon of gas and each truck saves 5 gallons. The total savings is there-

fore $5,000 + 25,000 = 30,000$ gallons per day. In other words, to save 720,000,000 gallons would then take 24,000 days or nearly 66 years. We make no estimate of the energy costs needed to maintain the expressway over this 66 year time period. Our conclusion is that no savings in energy is possible with this proposed new expressway.

Working paper 7

This paper is concerned with funding sources, and frankly provides a gloomy forecast. They do list the usual collection of funding sources, but do not detail how much any of these sources is likely to be able to provide nor, for that matter, how much they have historically provided. We understand that ADOT's resources are already stretched thin and might well be over committed. The same appears to be true for Federal sources.

URS concedes that currently available funding is limited, but suggests a possible \$.10 hike in **both** the state and federal tax on gasoline. This is estimated to bring in \$714 million per year, enough, they say, to finance on a pay-as-you-go basis in 11 years. They have forgotten, however, several factors:

First and foremost is the political improbability of being able to enact a \$.20 tax increase in gasoline, **all of which** would be devoted to this project.

Second, they have ignored the elasticity of demand for gasoline. While in the short run, demand for gasoline is relatively inelastic, over the long run it is definitely elastic. Several studies⁵ have shown this and the consensus value for this elasticity is -.6. That is, for each 10% increase in the cost of gasoline, 6% less will be used. Now that the government has mandated a major increase in gas mileage (CAFE) this should be factored into the equation.

Third, over a eleven year period, the cost of construction will rise at the rate of 7% or more per annum which means essentially that the last dollar spent will buy less than half of what the first dollar bought.

The notion of a toll road was also floated. URS did note that currently the economics of the project will not support this, at least as a sole source of funding. They also noted the opposition of the trucking industry.

Since it is clear that money for highway construction is not plentiful, there is even more reason to look for the least costly and most cost-effective solution to the congestion problem on our highways.

Working paper 8

This paper is mainly devoted to public and stakeholder input. We would like again to object to the public as not being a stakeholder, but accepting those terms for the moment we do take note that the public meetings were rather factually reported. The "stakeholder" meetings, however, were not. In particular:

5. "Gasoline Price Changes; The Dynamics of Supply, Demand, and Competition" Federal Trade Commission, 2005

Generally, the representatives of municipalities interviewed (cities/counties) were in favor of the project and in support of the need proposed by-pass. The response from other entities was somewhat mixed, ranging from those having no preference, those with mixed preference, and finally to a few that do not support the project. Those that did not support the project were typically environmentally-based groups, the trucking industry, and the railroad. [8-5]

We do not believe that the particular individuals that were interviewed as representative of municipalities were in fact truly representative. We strongly suspect bias when selecting persons to interview. In particular, we would much prefer to see elected officials interviewed rather than paid employees.

Conclusion

No major new expressway is needed nor justified. While there may be problems with congestion in the metro areas of Arizona, they should be considered on a local level. We conclude that the URS study available to date does not in any way support a new expressway.

Recommendation

Our recommendation: Abandon this idea for a new expressway/by-pass and concentrate on solving the local congestion issues.

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for
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