

# A Shared Solution for Future Livability and Mobility: An Alternative to the Mopac/SH45SW Loop

## Executive Summary

The Save Our Springs Alliance proposes that TxDOT study a new alternative that has not yet been studied. We call this alternative a “Shared Solution” alternative, which means a combination of many small actions that each contribute to Purpose and Need, and sum together to share in an overall solution that will prove more effective, more sustainable, and more valued by affected communities and stakeholders than the proposed freeway extension. This paper outlines generalized key elements of the Shared Solution, along with a proposed methodology for developing and analyzing specific projects in the Shared Solution.

### *Strategy 1, Boulevards with Innovative Intersections:*

Eliminating left-turn phases can be cheaper, safer, and more effective than widening arterials or diverting traffic to freeways

- Create concept sketches of opportunities at several locations.
- Conduct fatal flaw analysis, refinement, cost estimation
- Micro-simulate to determine Level of Service, congestion relief

### *Strategy 2, 7D Boulevard Communities and Activity Centers:*

Density, Diversity, Design, Destinations, Distance to Transit, Demographics, and Demand Management all play a role in reducing Vehicle Miles Traveled and creating great places where walking is commonplace, transit is attractive, and short drives replace long commutes.

- Create 7D projects that support Austin’s growth vision
- Invest in non-vehicle Complete Street right-of-way and amenities.
- Create artistic renderings of results, sufficient to estimate impacts and communicate benefits.

### *Strategy 3, High Frequency, High Visibility, Low Cost Transit Circulators:*

If you design transit that is frequent, fair (as in fare), fast, familiar, focused, and fun, you can double or triple ridership. Austin once got great ridership from free transit, but discontinued due to vagrancy problems and overcrowding. Newer strategies with fares can address these issues.

- Identify routes, attributes, ridership strategies, and cost minimization strategies, aiming for both impressive boardings per mile, and low costs per new rider
- Convert ridership gains to congestion reduction benefits; identify funding strategies

### *Other Potential Strategies*

- I-35 freeway optimization through preventive ramp metering
- Balance jobs and housing across region, so there is less need to travel to Downtown
- Parking ideas to encourage transit usage without hindering the attractiveness of downtown.
- Sequencing—build things in the right order, for maximum effectiveness

**Approach:** Develop Shared Solution iteratively, selecting small projects with the most bang for the buck. Work in conjunction with experts & stakeholders primarily responsible for Shared Solution ideas.

## **What is a Shared Solution?**

A Shared Solution includes a wide array of strategies that when combined, should add up to an impressive return on investment, ideally with lower costs and more positive impacts than the proposed freeway solution. It is possible that a Shared Solution will have higher impacts in some categories than the proposed freeway, but it may still prove viable and preferred by communities and stakeholders. Why? Because it will have significant congestion relief benefits, but also community-building and economic development benefits that the freeway-only solution lacks. It is these other benefits, often overlooked in freeway environmental studies, that could result in communities and other stakeholders surmising that the overall benefits more than compensate for any impacts of a Shared Solution.

But it is not clear to many stakeholders who are interested in a thorough investigation of a non-freeway solution the extent to which there has been an attempt to create a truly competitive non-freeway alternative. For example, a scenario that randomly widens existing arterials beyond what is planned would obviously be very destructive. But some arterials may not really need widening, especially if innovative intersections are used to create similar congestion relief benefits, but with less destruction and great community-building features. Small actions are also less disruptive and less expensive, so there is room to aggregate many together to form a Shared Solution. They then may have a strong aggregate effect on congestion not unlike the proposed freeway, but also prove more desirable due to other measures of effectiveness, besides just congestion relief.

Communities may have reluctantly supported the long-planned freeway extensions partly because they have not yet seen a good-faith effort to develop an attractive non-freeway solution. When such an effort is finally made, it may well prove to be the least damaging, practicable alternative required by resource agencies and by the community.

## **Context and Theme for Developing and Analyzing a Shared Solution**

The Clean Water Act requires that when a significant amount of wetlands or other water resource will be damaged by the proposed alternative, the sponsoring agencies must select the least damaging practicable alternative that meets their purpose and need.

Given the concerns of a large number of citizens who do not want the freeway and are not convinced it is necessary, as well as the requirement of conclusively demonstrating that there is no practicable alternative to the freeway, it is incumbent upon TxDOT to truly demonstrate that they will make a serious effort to develop and analyze the best non-freeway alternative that can be developed. No such serious attempt has yet been made, but many experts assure us that such an alternative can be developed, and if properly analyzed should result in something impressive for congestion relief, economic development, environmental responsibility, and community building.

At present, our proposed Shared Solution has several specific categories of investigation, but within those categories actual project proposals and analysis methods are still largely undetermined. This document outlines what we see as important steps for both developing and analyzing a Shared Solution, but not necessarily a comprehensive list. Other potential strategies, analytic methods, and project refinements will likely emerge through the process, just as occurred during the process of arriving at the currently preferred freeway alternative.

Developing the Shared Solution should be approached as if avoiding the freeway extension and associated impacts were the preferred idea in the first place. The freeway then becomes a secondary fallback if efforts to avoid it prove ineffective or unpopular. That way the TxDOT development and analysis team will be more likely to approach each Shared Solution idea as if it might actually be a good idea, and hence put respectable effort into making each SS project the best that it can be.

## Steps Required to Develop and Analyze a Shared Solution

1. Review the universe of project types, policies, and operational management strategies that can in theory reduce the need for a Mopac extension, even if just by a seemingly small amount.
2. Consult with experts well known for their knowledge of a given strategy to determine the potential costs, benefits, and impacts of each strategy.
3. Ask their opinion on best practice approaches for evaluating costs, benefits, and impacts in an apples-to-apples manner vs. the preferred alternative.
4. To the extent that a potential element in the Shared Solution might have other benefits not specifically sought for in the Purpose and Need, determine best practice methods of quantifying these other benefits for purposes of full disclosure of impacts (i.e., incidental benefits are positive impacts that need to be disclosed in an Environmental Impact Statement). This way communities and stakeholders can understand and appreciate both primary and secondary positive impacts just as they are informed of both primary and secondary negative impacts.
5. Secondary benefits, or impacts, of the Preferred Alternative that are not specifically sought for in the Purpose and Need should also be identified for consistency and objectivity.
6. In light of expert opinions on evaluation strategies for all potential elements, both freeway and non-freeway, agree upon a general methodological approach for determining both positive contributions and negative impacts of each element.
7. From the universe of non-freeway general elements, identify as many specific project opportunities as possible. From the resulting projects list, select elements for inclusion in the 1<sup>st</sup> iteration of the Shared Solution based on a “low-hanging fruit” approach – i.e. project ideas likely to result in the most congestion relief for the least amount of money or impacts, and with the strongest likelihood of community support would be added first.
8. The cutoff for a project’s inclusion in the first iteration Shared Solution is when the initial guess at the sum total cost of Shared Solution projects exceeds the cost of the Preferred Alternative, then remaining project ideas must wait for another iteration before further consideration.
9. Once first iteration projects are on the table, those projects can be more methodically evaluated to determine likely congestion relief, likely right-of-way (ROW) impacts, and a refined cost range. If a first iteration project seemingly would have significant congestion relief, but appears to have serious or maybe even fatal flaws, some effort should be made to correct its flaws or lower its costs in an acceptable way (i.e. don’t dismiss an idea at the first obstacle).
10. The effects of each project might be classified according to the following five categories:
  - a. Primary positive benefits: those specifically sought for by the Purpose and Need

- b. Secondary positive benefits: side-effect benefits as well as benefits intentionally sought after to make the project more palatable to affected communities.
  - c. Primary negative impacts: As traditionally defined by NEPA—acres of wetlands consumed, acres of new right-of-way, number and nature of directly affected properties, etc.
  - d. Secondary negative impacts: As traditionally defined by NEPA—air quality, sound, induced demand, land use affects, etc.
  - e. Costs: What is a likely range for the overall price tag of the projects?
11. With a project's first iteration effects known in each of these categories, it is easy to rank projects according to weights placed on each of the five categories by a Steering Committee.
  12. Projects with high negatives relative to positives should be assessed. Can negatives be minimized in some way to make the project attractive? If not, these projects could be excluded from the second iteration.
  13. At the end of an iteration, the sum total of all categories can be compared against the sum total of the same categories for the preferred alternative. The ranking criteria used to screen small projects for the Shared Solution may also be used to evaluate the Preferred Alternative against the sum total of individual non-freeway projects as a single Shared Solution.
  14. If first iteration costs were less than initially assumed, or if some project ideas fall off the list of attractive elements for the Shared Solution, then other project ideas previously passed over, or spin-off ideas that have occurred since the first iteration, could be evaluated and ranked to determine their attractiveness for inclusion in the second iteration.
  15. If first iteration costs were more than initially assumed, which individual projects can have their scope scaled back without losing too much of the primary and secondary benefits that made it attractive in the first place? Which projects should be dropped from the second iteration?
  16. Use two or maybe three iterations for a fully developed Shared Solution, complete with a fair estimate of each individual project's benefits, costs, and impacts, to see how well the sum of the parts meets purpose and need, and stacks up as a practicable alternative to the preferred alternative. If it appears competitive, or at least has many attractive, competitive elements, it can then be advanced through any remaining required NEPA analysis and public input, to determine if it can emerge as the new Preferred Alternative.

Even if the Shared Solution can be shown to be technically superior to the Freeway Solution, the public, stakeholders, communities, and agencies may still reject certain projects or elements that were proposed for the Shared Solution for political or other reasons, resulting in a "Partial Shared Solution" of projects that are acceptable to the community. If the original Shared Solution is whittled down so much that it would prove ineffective relative to the benefits of the proposed highway, then perhaps a hybrid solution could be created, whereby the most effective and popular elements of the Shared Solution are sequenced first, while a highway corridor, perhaps of lesser width and design criteria, is preserved to be implemented last, if the next generation determines it to be useful at that time.

Or even if enough of the full Shared Solution is embraced by the public, sufficient that it would be an effective replacement for the freeway, the public may still desire to preserve the option to build something someday within the freeway alignment, but defer to the next generation to decide if a roadway be built at all, and if so, whether it should it be a full freeway or something else. That case seemingly would produce a similar outcome, where non-freeway elements are sequenced first, along with corridor preservation, but roadway construction within the corridor is intentionally required to be after 2040 so that the next generation can determine its value at that point.

### **Shared Solution Key Strategy: Innovative, Alternative Intersections**

An “Innovative Intersection” is a general term used to describe any intersection strategy that is able to eliminate left-turn phases from a major intersection by handling lefts in some other way than traditional left-turn pockets and arrows. The result in every case is greater efficiency, which translates into more capacity and less delay without widening arterials. We anticipate that Innovative Intersections will be a significant element of a Shared Solution alternative to the Mopac Extension. Designs that are more compatible with multi-modal environments should be top priority, reverting secondarily to the more auto-oriented solutions. Here are the general steps involved in developing and analyzing locations for these designs.

1. Locate all signals in the study area that have, or are likely to have, dedicated left-turn phases.
2. Are any of these locations failing now? Does the future traffic forecast expect them to fail?
3. For candidate locations, study each situation. Create concept sketches for Quadrants, Town Center Intersections, Bowties, and Sync-Streets, which are all highly compatible with mixed-use, multi-modal environments. If preferred concepts won’t work, move on to continuous flow intersections (CFI), Thru-Turns, etc., which all reduce congestion, but are less compatible with multi-modal environments.
4. Initial concept sketches can be as simple as drawing lines with a felt-tipped pen or in Google Earth, meant only to prompt operational and design engineers to think about the implications, looking for flaws and for ways to correct the flaws, and communicating their thoughts back to the concept originators to see if together they can find workable solutions or not.
5. Travel demand models such as the CAMPO model are usually inadequate for determining congestion relief due to Innovative Intersections. Feasible concepts should be micro-simulated, to determine congestion relief. A software modeling program such as Synchro can probably be used most of the time (Synchro is much less time consuming than complex software like Vissim). While it is difficult to truly model many designs in Synchro, there are still good ways to use it for approximating benefits, such as removing lefts completely from the intersection (Quadrants and CFIs), or routing them as throughs, then rights (Bowties, Thru-Turns).
6. Once microsimulation determines expected benefits, those benefits often can be input to travel models such as the CAMPO model and manually set the speed and capacity of approach and egress links.

### **Shared Solution Key Strategy: 7D Boulevards and Activity Centers**

Boulevard Communities and Activity Centers use “7D Place-Making” strategies to bring renewed economic development and catalyze major private investment into the designated area. Concepts can

be applied to new developments, but more commonly they are applied to aging and hap-hazard commercial areas that decades ago were new and lively, but have since plateaued or stagnated. There are many major benefits of such 7D Places—transportation benefits are significant, but not necessarily the most important. Transportation benefits include more walking, biking, and transit—especially valuable to youth and the emerging wave of seniors who may not want to drive, or shouldn't drive. Reduced Vehicle Miles of Travel (VMT), and reduced Vehicle Hours of Travel (VHT) are also likely.

Delay and congestion may still exist within Activity Centers—there is a lot of activity packed into a fairly small space, after all. But with good connectivity, innovative intersections, and multi-modal circulation, delay can be minimized. Reduced delay as measured by traffic engineers is not necessarily an ideal goal. For example, consider a suburban sprawl scenario, where homes are usually very far away from jobs vs. a scenario that focuses mixed-uses into Activity Centers spread across the region. Would you rather travel 40 miles in 40 minutes on freeways with zero delay, or travel five miles in 15 minutes down beautiful arterial streets, experiencing 3-minutes of delay? The shorter time result often still ranks poorly by the math that engineers often use to rank projects.

Such measures of beneficial impacts should be at least disclosed and included in weighting criteria for selection of a preferred alternative. The 7Ds are summarized below, after which is an outline for how to encourage the creation and success of such “Places.”

### *What are the 7Ds?*

1. **Density**—as an activity center increases in density, VMT per capita decreases. When there are more things close together, you are more likely to walk, bike, or ride transit. Or if you do drive, it is more likely to be a short drive.
2. **Diversity**—When most houses are in suburbs, and most jobs, entertainment, and many necessary items are in the regional center, the result is an extreme lack of diversity that results in huge amounts of driving. But if more areas can be diversified with their regional fair share of quality retail, office, entertainment, housing, and a general diversity of uses, many more people will end up very close to goods and services they need.
3. **Design**—If the local street system within an Activity Center has more connections (less circuitous and fewer cul-de-sacs), it will be easier for more people to use transit, or to walk, bike, or take short drives. Also, Complete Street design features such as large-canopy trees, on-street diagonal parking, planted medians with pedestrian refuge, street furniture, wall-to-wall ground-floor retail with mixed uses on upper floors—all of these things create market momentum that results in fantastic, walkable places over the years.
4. **Destinations**—Part of what helps define a Place or an Activity Center, is that it has lots of great jobs, great shopping, and great entertainment—popular destinations that attract people from all the surrounding neighborhoods. Transit then has a target to aim for, and there is less need to drive far if great destinations are close by.
5. **Distance to Transit**—It does little good to build expensive transit infrastructure, and then put a used car lots and a gas station as the first uses next to transit stations. People use transit if transit is close, so communities are wise to adopt minimum zoning standards within a quarter mile of a transit station (such as at least 40 units per acre if residential, or at least four-story office buildings with ground-floor retail, if commercial). Free, frequent transit shuttles can act as

“moving sidewalks”—extending the reach of regional transit, and making it easier to circulate within the Center without a car. For more square footage near transit, it is also good to relax or eliminate parking standards (perhaps in trade for something). Developers know they must provide adequate parking anyway, even in transit-oriented areas, so why force them to install empty spaces? High density doesn’t have to mean cheap, problematic apartments that degenerate quickly. Form-based zoning can require all buildings in the area to meet a certain architectural and quality standard.

6. **Demographics**—Many people want to live in higher density, walkable, mixed-use areas where they can take transit and won’t have to drive as much—growing numbers of seniors need to, and many who are not yet raising families want to. But if the only quality places available are single family homes designed for raising kids, they’ll end up in those even if they’d prefer something else. If we design Activity Centers with our changing demographics in mind, our parents and children can stay close by. Then they need not contribute to congestion, and the elderly can avoid “white-knuckle” driving conditions.
7. **Demand Management**—When vehicle demand is too high, we have three options: 1) Increase supply to match demand, 2) Manage demand to available supply, by making it easier and desirable to choose something else; and 3) just accept the misery (which by default limits demand to supply, but in an unhappy way). If new construction isn’t an attractive option, there are a number of demand management policies that can help reduce the need for construction.

### *Making 7D Boulevards & Centers Part of the Shared Solution*

1. Identify the region’s priority locations for mixed use, redevelopment, and higher density development. Seek to include improved bikeways, on-street diagonal parking with frontage access roads, sidewalk bulb-outs into intersections, planted medians, greater connectivity, and quality transit stops. Also identify potential transit shuttle circulation routes and frequencies.
2. Rate parcels in the general vicinity based on likelihood or desirability of potential change. Invite city officials to participate in the rating. Some locations, such as single-family homes, will be unlikely to intensify regardless of the investments. Vacant parcels or struggling commercial may be very desirable to change and intensify.
3. Lay out potential locations in SketchUp (computer design program) for two purposes: 1) allows impacts from needed right-of-way to be determined and compared with the desirability of change parcel map, to reflect that some impacts and resulting changes may not be so onerous, if changes are desirable anyway; 2) allows affected communities and stakeholders to envision the potential outcome and see the affected right-of-way slivers in order to have an informed opinion on the tradeoffs.
4. Work in conjunction with operational and design engineers. 7D features would often be included as part of Innovative Intersection proposals, so engineers should review Complete Street proposals for necessary adjustments.
5. Convene local/national 7D and economic development experts to weigh in on the range of potential market responses to the package of investments at the various sites. What mix and density of uses would probably occur given existing land use regulations? Could even more positive development occur if communities adopted form-based codes, removed minimum

parking requirements, etc? Could new jobs, services, or housing be attracted into key areas to help create better jobs/housing ratios? If 7D sites achieve the mid-range of potential market responses, what kind of affect would it have on VMT, VHT, Congestion, Delay, Walk/Bike trips, Transit Ridership, Farmland consumption, and other measures of effectiveness? Would it have a positive or negative outcome on a municipality's balance between tax receipts and required expenditures?

6. A good Shared Solution should consider setting aside funds to assist communities with creating form-based code development in key locations, and with funds for planning the architectural and operational layout of a Complete Street plan that will work well for each situation.

### *Why include 7D Centers in Shared Solution?*

Many and perhaps most of the benefits of 7D Boulevards and Centers are found in performance measures outside of just congestion relief. So why spend money and create impacts to get Complete Streets when so much of the benefit is not just about congestion relief?

Because reducing auto congestion is only part of what citizens care about. We believe they also care about a legacy of beautiful, livable corridors with thriving businesses, healthy lifestyles, reduced consumption of farms and wild habitat, and a wider array of mobility options for all citizens—especially for the growing numbers who cannot drive safely in white-knuckle, high-speed conditions.

### **Thought Experiment**

Suppose the end result of the Shared Solution is that it meets Purpose and Need in that it reduces VMT in congestion by an impressive amount, but say that amount is only 80% of the level that the DEIS freeway extension achieves for this primary objective.

But suppose that on secondary objectives the Shared Solution will achieve far better results for economic development, multi-modal usage, reduced farmland and wetland consumption, and property impacts that are usually in harmony with desired redevelopment anyway.

Is it then correct to conclude that the freeway should be preferred over the Shared Solution because it was slightly better at achieving a narrowly defined purpose and need? We contend that both solutions should be presented to the communities that have to live with the result to see what weight they place not only on benefits directly included in purpose and need, but also other beneficial side-effects of each scenario. In this case, they may well favor the Shared Solution, because a healthy, thriving community is about more than simply reducing congestion.

Crafting a solution with Complete Streets that is in harmony with Austin's sustainability goals is an essential element of presenting the public with an alternative vision. That way, the non-freeway alternative may well prove to be the least damaging practicable alternative—practicable because communities decide beautiful, multi-modal streets are the future they'd rather have, even if they end up only 80% as effective at reducing congestion in the near term.

## High Frequency, High Visibility, Low Cost Transit Circulators

Why do so few people ride regular buses? Many reasons, but a significant reason is unfamiliarity with the system. People see buses here and there, but few know where they came from or where they are going unless they actively seek out the route map and schedule. Part of the reason light rail and Bus Rapid Transit gets good ridership is because the vehicles are unique, and there is a visible path. Virtually everyone passively knows the path, and can then easily elect to use it for trips along that path.

But these systems require dedicated right-of-way and expensive construction, which requires them to achieve huge numbers of riders in order to have a good cost / benefit ratio. Dedicated right-of-way creates visibility and speed advantage, but there are other very low cost strategies that create great visibility and speed advantages as well. These strategies will work even better when supported by sustainable land use visions and codes.

7D Activity Centers generate a lot of internal trips. Many will be walking and biking, and if not that then short drives, but if there is too much need to drive then streets will be excessively congested. People will be willing to ride transit shuttles for short trips, if the trip is low-cost or free, the wait time is not excessive, and generally incorporates strategies for attracting high-ridership at a low cost. Circulators can also help reduce regional and I-35 congestion, by connecting more people to regional transit. With strategies like queue jumping and branding, circulators can achieve impressive ridership with very low capital investment, thus helping them achieve good cost per new rider ratios potentially more impressive than either light-rail or BRT.

### *Steps involved in making Transit Circulation Part of the Shared Solution*

1. Identify potential circulation routes, aiming to connect regional transit to job centers.
2. Determine service attributes for two target markets – those connecting to regional transit, and those desiring only to circulate within the Activity Center itself.
3. Determine a branding strategy that will increase the likelihood that citizens will become passively aware of the origins and destinations connected by the circulators.
4. Determine appropriate vehicles—smaller, more nimble, efficient shuttles can carry more people than full-sized buses, if those shuttles are coming by more frequently.
5. Determine appropriate phasing—on one hand, circulation within Activity Centers will be more widely used in later phases when the market has successfully transitioned to a 7D place, but on the other hand the presence of good circulation early can help catalyze such 7D places.
6. Determine likely ridership – Some aspects of this type of transit have never really existed in Austin, so the CAMPO model may not be adequate for predicting ridership. Estimates may need to be created or supplemented by 7D or other evaluation strategies, such as ET+.
7. Convert ridership gains into equivalent congestion reduction benefits.
8. Determine funding strategies—will costs per new rider be impressive enough for local and federal funds? Are there other strategies to make up any shortfalls in costs?

A primer called “Making Buses More Like Trains” is available at [MetroAnalytics.com](http://MetroAnalytics.com) in the Downloads section, which would form much of the basis for our ideas on devising popular-yet-affordable transit.

An excellent video of Boulder, Colorado's hop-skip-and-jump routes can be seen at <http://vimeo.com/12472216>. Boulder's system shares many aspects with the circulation strategy described here, and highlights the low-cost, high-ridership gains that are possible.

## **Making I-35 and MoPac More Efficient: Freeway Optimization via Preventive Ramp Metering**

Freeways are supposed to be able to carry about 2,200 vehicles per hour per lane (vphpl), and they usually will do that – for about 15 minutes. But when more traffic is allowed on than can fit, freeways get mired in stop-and-go and their throughput drops down to just 1,500 or so – a loss of about 30 percent! That means we have 100% efficiency at 3 pm when there is only 70% demand, but sadly we also have just 70% efficiency at 5 pm when there is 100% demand. Or in other words, suppose I-35 is worth \$3-billion. That means we lose \$1-billion of its value when we inadvertently allow it to fail, exactly at the time we need the full \$3-billion worth of capacity. Then there is billions in lost productivity on top of that.

The historic solutions to this problem are to just build more, but that is like replacing your V-8 engine with a V-12, because three of the cylinders have stopped firing. Has anyone considered getting serious about a tune-up?

**“Freeway Tune-ups” are technically easy!**— Widening and extending freeways is politically popular, partly because it is how things have always been done. Everyone hates freeway congestion and the obvious way to reduce it is to make more and bigger freeways. But it is getting so expensive it would be wise to at least consider other options. Society usually instructs engineers to increase supply, but it is also relatively simple for engineers to instead devise systems where demand will not exceed existing supply. First you improve their options for avoiding the freeway. Then you simply devise a computerized system that adjusts ramp meter wait times so that the number allowed on will not cause flow rates to exceed 2,150 vphpl. “But that will cause long queues on the ramps, which will back onto cross streets.” That is true, and when the mayor calls the DOT and asks them to speed up the meters, backing onto cross-streets is largely the reason.

A good solution to this problem is to widen on-ramps to 3, or 4+ lanes. Then people can wait in line for the ramp meter to let them on without stacking back so far that they'd impede traffic on the arterial cross-street. They may end up waiting 4-8 minutes to get onto the freeway, but it turns out that for those making long trips, spending more time waiting to get on the freeway actually saves a lot of time. How so? With the existing system, you get on the freeway quickly, but then lose 15 to 60-minutes stuck in stop-and-go. With preventive metering, you might spend 4-8 minutes waiting to get on, but then it is 65 mph all the way. So you save time, even if the up-front time was painful.

But skeptics ask, “Wouldn't that make a lot of people move over to parallel arterials, congesting those?” Yes, it would encourage people making short trips to stay off the freeway. That is good because freeways are too expensive to be overloaded by short trips. But on the flip-side, there are already a lot of other drivers on arterials because they couldn't fit on the freeway. Since the freeway can move 30 percent more traffic at 60 mph than at 30 mph, a system that ensures 60 mph will have more overall

capacity, and will bring many back to the freeway. The net effect is that more may come back to the freeway than spill over to arterials, so both the freeway and arterials could end up less congested! We believe people will be willing to spend a little more time on the ramp if a solid public awareness campaign helps them they can save 15 to 60-minutes on the mainline.

In addition, you can also make a way for people to avoid waiting in long lines if they are willing to spend a dollar or so to bypass the ramp meters. Transponder towers on the ramps automatically add a few cents to a bill you receive at the end of the month, making it possible for anyone willing to pay to have a guaranteed 60 mph 5 pm slot on the freeway without having to wait in line.

**Economic Boon?**—Time is money, and we expect high-value business activities will be willing to wait 4-8 minutes on ramps if it saves them 15-60 minutes of delay on the main freeway, but a serious business and public awareness effort would need to be made so that people appreciate just how much time they are saving. If Austin adopted this strategy, it would create a competitive advantage over cities that don't. Managing access to the freeway via extra time on the ramp or bypassing the ramp with tolled access helps motivate many people to take transit, alternative routes, or travel at less congested times.

**Can we attract great businesses?**— Imagine how attractive it will look if Austin can say to wealthy entrepreneurs seeking to relocate their high-paying jobs, “We’ve got beautiful, uncongested, pedestrian friendly streets, excellent transit circulation, and optimized freeways to guarantee that you can use your car to get anywhere you need to go at 65 mph, 24-7—facts that exist in no other large city in the world.”

### **I-35 and MoPac Optimization: Steps for Inclusion in the Shared Solution**

1. Identify key on-ramps that could be widened for more peak-hour storage and metering, to prevent those segments from failing.
2. Provide digital signs of ramp wait times at on-ramp decision points so that people can decide whether to wait on the ramp, take an alternative route, or just go shopping another hour until congestion clears up.
3. Evaluate the new capacity that freeway optimization can provide to the screenline.
4. Determine the new amount of VMT that would occur in congestion. Ramps will be more congested, but overall VMT in congestion and resulting delay should go down considerably. The CAMPO model could potentially be used for this exercise, as well as other evaluation techniques to be determined by a group of technical experts.
5. What are the economic benefits and social costs of the proposed strategy?
6. If it is an effective and important aspect of the Shared Solution, develop informational materials, videos, etc. so that people can quickly and easily comprehend the pros and cons of the freeway demand management strategy. Introduce such pros/cons as part of public educational outreach.

### **Jobs/Housing Balance as a Congestion Management Strategy?**

Where residents and jobs choose to locate seems at first glance to have little to do with the features of our transportation infrastructure, but in reality location choice is greatly affected. When high-speed, free highway infrastructure is primarily focused on connecting residential suburbs to downtown jobs,

then that is exactly what will happen – suburbs will lack jobs, and downtown will lack residents. When the imbalance is substantial, people have to commute long distances whether they want to or not.

A good focus on supporting Boulevard Communities and Activity Centers outside of downtown can help attract jobs into suburban locations, potentially reducing peak hour demand on freeways. Likewise, efforts to encourage residential units downtown will result in a higher share of downtown’s jobs filled by folks who can walk, bike, or take a short local drive to their job – also reducing the need to extend or expand freeways.

1. Convene a Delphi panel of experts to evaluate Shared Solution project concepts vs. Mopac Extension, and determine a likely market response to each. Which will result in better jobs/housing balance? What difference will it make to congestion and sustainability?
2. Once job/household distribution is determined, test the results within the CAMPO model and with supplemental 7D methodology to then see what the analytical tools say about resulting overall congestion. Reductions within the Study Area can be counted toward Purpose and Need. Reductions outside the study area should be disclosed as a beneficial side-effect, and counted as part of the ranking strategy that considers other measures of effectiveness outside of those sought for specifically by the purpose and need.

Localized economic development may be able to kill two birds with one stone – supporting the local economy, which in turn reduces regional congestion.

## Study Area

Mopac is obviously being planned to connect to I-35, but this EIS fails to recognize that. There is a need to conduct a full public process, perhaps a tiered EIS, on the effects of the larger plan. Then smaller pieces of that vision could proceed through a second tier if the overall vision is warranted in the first tier.

## The Future is Changing – Addressing Shared Solution Sequencing

Most travel demand models assume that the behavior of residents in the future, and technologies available to them in 2040, will be similar to the way things are at the time of their most recent surveys. Thus the model may have no knowledge of the higher proportion of seniors expected by 2040, nor would it understand their particular needs and desired modes of travel. It likewise may not know about how wireless and computer technology is transforming travel – a large and growing share of the workforce rarely leaves their home. Yet the models used to justify the extension of MoPac probably do not recognize this.

The desire and willingness to walk, bike, and take transit is increasing all the time, and the model may well be under estimating the 2040 impact of alternative modes. Driverless cars are proving successful, and may soon be legal in some states. That is technology with potential to nearly double capacity of existing freeway lanes on I-35.

## Sequencing

An important aspect of the Shared Solution is determining appropriate sequencing of its elements. The approach recommended herein anticipates that there will never be a need to extend Mopac. However, if after a thorough effort to avoid such, the public may still find it wise to preserve the option to extend

at some point, and allow a future generation to decide. Here is the process we recommend for addressing sequencing.

1. Identify all non-freeway projects that proved cost-effective in their contribution to the purpose and need, and were generally found to be favorable when presented to public and agency stakeholders.
2. With non-freeway elements identified, sequence them based on their ability to address existing congestion, and their likelihood of helping the region and communities achieve their land use and economic development objectives.

This will allow time to reveal the extent to which some of the emerging changes noted here can address transportation needs without the extension.

## What is Wrong with a New Freeway?

### **The Shared Solution has big positives, *and* the Freeway has big negatives**

The document to this point focuses primarily on the positive aspects of the Shared Solution, but there are also significant negative aspects of the freeway solution that lend all the more weight to pursuing the Shared Solution. This section highlights a few that may not have been well covered in comments submitted by others.

### **New Freeway Works Against Community's Vision**

We have already made a case that the Shared Solution will aid with important economic development goals, with rejuvenated corridors and activity centers, better than a new freeway. But not yet fully explored is the extent to which the freeway will work against the community's vision.

Why has the MoPac extension been carried over from plan to plan, but never yet built? Because it still isn't necessary, but everyone assumes it must eventually be necessary. It's been on plans a long time after all, and there haven't been a lot of better ideas. Also, communities haven't yet recognized that such a freeway would tend to work against their own land use and economic development goals.

Austin supports infill and redevelopment to rejuvenate older, worn-out, auto-oriented strip-malls and business locations. These locations can then bounce back as strong, walkable, mixed-use Activity Centers. If the Centers succeed, they will reduce the consumption of valuable farmlands and other natural lands. It will reduce the costs of all kinds of infrastructure associated with sprawling subdivisions.

### ***So how does the freeway work against Austin's vision?***

Several ways. First, it results in poor jobs/housing balance, which in turn results in pressure to super-size freeways. Also, there is realistically only a limited amount that our area can afford to spend on transportation. If we push billions into extending and widening freeways then there will never be enough cash to invest into innovative intersections, transit, and other strategies that provide options, build communities, and tackle local congestion. There will never be boulevard beautification and multi-modal features to turn ugly, haphazard, rage-inducing streets into great places for business, walkability, and livability.

But a good job of reinventing local arterials – making them flow better for cars, but also making them livable and attractive with quality transit, bike, and pedestrian infrastructure – will make it easier create great mixed-use “Places” with better jobs/housing balance. Then there won’t be as much pressure on freeways, because citizens will be a lot more likely to work, shop, and entertain a lot closer to home. All of this ultimately reduces congestion more permanently and less expensively than freeway expansion projects can.

Shouldn’t we at least make a valiant attempt at something else before spending limited resources something that arguably does more harm than good?

## **Shared Solution is Stronger on Key Strategic Goals**

Most transportation agencies have key strategic goals. In our opinion, the Shared Solution will prove far more effective at achieving these key goals than a freeway extension.

### **1. Preserve Existing Infrastructure**

- a. An extension does little to preserve existing infrastructure. It creates new infrastructure that will need maintenance, preservation, and patrolling at ongoing expense.
- b. A shared solution is heavily focused on preserving, improving, and maximizing use of existing infrastructure.

### **2. Optimize Mobility**

- a. Freeway expansions usually improve mobility in the short-term, but will it optimize it? When costs run into hundreds of millions or billions for a relatively small amount of traffic, that may be among the lowest returns on investment – not very optimal.
- b. Optimize mobility for whom? Single occupant auto commuters. But what about mobility for seniors who shouldn’t be driving? Low income people who can’t drive? Younger generations who want alternatives to driving? What about the local congestion that still plagues the area daily?
- c. A Shared Solution will improve mobility for drivers on arterial streets, but also for bikers, pedestrians, and transit riders, and in a more sustainable way – a broader definition of optimal, for a longer period of time.

### **3. Improve Safety**

- a. Freeways statistically are very safe per mile driven when compared to arterials, but they also induce many more miles driven. Spending a lot to attract people away from arterials and onto freeways may not be as effective as spending directly on arterials to make them safer.
- b. A Shared Solution will feature innovative intersections, access control, bike/pedestrian safety improvements, and many other actions that we are confident in aggregate will improve safety more than the current proposal.

### **4. Strengthen the Economy**

- a. Freeway projects certainly strengthen the economy, but they also induce demand and fall back into stop-and-go quickly, reducing their return on investment.
- b. A Shared Solution, which can include optimizing existing freeways, can result in better mobility for much longer timeframes, improving the overall return on investment.

- c. High-tech firms and many of the best employers in the nation make relocation decisions based largely on the quality of transit, the attractiveness of walking and biking, and the quality and nature of the streetscape and other buildings around their site. A shared solution will score much higher in its ability to attract and retain top jobs for the area's talented workforce, because it will focus resources into the things businesses care about the most.

## Funding the Shared Solution

To satisfy stakeholders and resource agencies that TxDOT has done everything in their power to create a less damaging, practicable alternative to the freeway, TxDOT should fund both the development and analysis of the Shared Solution.

If citizen stakeholders must break their own piggy-banks to hire experts to develop and analyze specific ideas, odds are they simply will not be able to raise enough funds to ensure Shared Solution projects can be developed and analyzed in a meaningful way. Then stakeholders and resource agencies will worry that the best project ideas may still remain obscured. Why? How can the existing TxDOT team be trusted to refine the details of general ideas that they know little about, as evidenced from the fact that they failed to see the opportunities in the first place? Thus there is a risk that TxDOT will not have truly identified the least damaging practicable alternative if they cannot create a path for outside experts to develop a serious alternative to the freeway extension.

We encourage TxDOT to consider cost sharing with us to help us invite experts in who are qualified to guide the development and analysis of this Shared Solution. It is a good investment that will create good will with a large group of concerned citizens, and help avoid highly visible critique and potential litigation. It ensures this alternative can be well articulated, detailed, and defended by those experts who have helped us all envision the possibilities in the first place. If TxDOT "wins" by minimizing the role of outside experts in Shared Solution oversight, then citizens and resource agencies lose. That could mean these stakeholders will then have no path to win, unless through court action – and that would be lose-lose for everyone. Help us develop a win-win solution instead.

### ***Bottom Line: This Subject is Important!***

We believe a solid apples-to-apples comparison of the pros and cons of the Shared Solution vs. the current solution, along with graphics and renderings aimed at assisting the public and officials to understand the two divergent futures, will be worth the effort given the magnitude of the effect on the entire region for generations to come.