This document summarizes the written (letters, emails, online submittals) and oral testimony received by the Denver Regional Council of Governments (DRCOG).

Oral testimony was provided at the public hearing along with accompanying written testimony by 15 speakers expressing opposition to the I-70 East reconstruction and widening project (from Brighton Blvd. to I-270) included in the Draft 2040 Fiscally Constrained Regional Transportation Plan. CDOT released a Supplemental Draft Environmental Impact Statement (SDEIS) for the project in August 2014. The following oral testimony was provided, with DRCOG staff response offered to provide further explanation regarding all oral testimony:

1) Becky English of the Sierra Club read into the record testimony from Robert Yuhnke, Attorney and Colorado resident, expressing that the SDEIS does not adequately address pollution impacts, alternatives, or mitigation measures.

2) J.D. MacFarlane of United Denver East urged the re-routing of I-70 to I-76 and I-270, and replacing the current I-70 alignment with a boulevard.

3) Marty Amble, citizen, said the published cost estimates for the re-route option are unrealistically high, and that the American Planning Association’s Transportation Division prepared a white paper in 2014 critical of the currently-proposed I-70 project.

4) Jimmy Bacon, citizen, raised concerns about environmental justice, air quality, and adequacy of the data presented.

5) Armando Payan, expressed concerns about how the project would be financed vis-a-vis transportation maintenance needs, as well as whether local contractors would be precluded from employment opportunities associated with the project.

6) Jude Aiello from Denver Neighborhood Advocates read into the record testimony from Robert Yuhnke, Attorney and Colorado resident, expressing concerns about the SDEIS not adequately addressing pollution impacts, project-level conformity, alternative alignments, or mitigation measures.

7) Elisabeth Evans from United North Denver noted potential asthma and respiratory health impacts to children.

8) Steve Kinney, a Realtor, discussed property values around the project and expressed concern that the SDEIS under-estimates the number of residential property condemnations the project may require. He also noted that the impact of the widening of the interstate would result in a facility footprint three times as wide as the existing cross-section.
Summary of Written and Oral Testimony Received
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9) Cynthia Thorstad from League of Women Voters of Colorado noted the lack of adequate transportation funding overall and felt that revenue reductions should drive project scope changes to the I-70 project. She stated her belief that the published costs to re-route I-70 are unrealistically high and that the cost of the currently-proposed project is twice as much as the re-route option. She advocated for the “maintenance” alternative until the project could be studied further.

10) Frances FranAguirre from United North Denver, a retired teacher, expressed concerns about children’s health, the project’s proposed “cover,” and whether widening I-70 east of I-25 would eventually necessitate widening I-70 west of I-25.

11) Glenn Hanley, citizen, raised concerns about respiratory and health issues, childhood brain development. He felt the SDEIS undercounts affected schools and daycare centers and the health impacts of the highway on residents.

12) Frank Sullivan felt that CDOT has been cordial but inflexible regarding the I-70 project. He urged DRCOG to request CDOT to re-route I-70 as the current proposal will not make life better.

13) Thad Tecza, citizen, expressed the opinion that the project is not fiscally constrained, that other transportation needs will suffer because funding will have to be diverted to this project, and that it is immoral to implement an interstate project that would increase traffic in residential areas. He also stated that opposition to the project is not “NIMBY-ism.”

14) Kathleen Butler from the Sierra Club, read into the record testimony from Albert G. Melcher that focused on opposition to the SDEIS-proposed project.

15) Ann Elizabeth, Globeville resident, urged that the new CDOT Secretary re-examine the project, strongly consider a smaller 8-lane alternative, and develop a more visionary solution that respects humanistic values. She also stated her belief that there is no further margin of error regarding the potential impacts of additional pollutants.

DRCOG staff response to all I-70 East comments: Staff has documented the concerns expressed regarding the I-70 East project. The 2040 RTP reflects the most up to date proposed scope for I-70 as recommended in the I-70 East SDEIS (August 2014). If the recommended scope for the corridor is changed during the Final EIS process or due to fiscal constraint issues, the 2040 RTP will be amended and the regional air quality conformity will be reevaluated to reflect scope changes.

After receipt of this oral testimony, DRCOG Board member Jim Benson from the City of Commerce City provided comments opposing the alternative to re-route I-70 to the north along I-76 and I-270. DRCOG Board member Deb Perkins-Smith from CDOT said CDOT
Summary of Written and Oral Testimony Received
(During the Public Comment Period from December 17, 2014 to January 21, 2015 Hearing)

is reviewing comments received through the SDEIS and preparation of the Final EIS. This concluded the public hearing.

The following written materials were received in conjunction with the public hearing, and were referenced or summarized by the speakers during oral testimony:

- Un-authored report: “A Better Option for I-70 East” (Links: Sections 1-3 and Sections 4-5)
- Written testimony from J. D. MacFarlane
- Written testimony from Albert G. Melcher
- Written testimony from Rocky Mountain Sierra Club-Robert Yuhnke, Becky English
- White paper from Steve Kinney: “Impacts on Home Values and City Revenues from Changes on I-70”
- Email correspondence from Marty Amble containing the following links/attachments:
  - American Planning Association Transportation Planning Division white paper on I-70 project (also included in un-authored report)
  - Comments from and Youtube link to John Norquist, former president of the Congress for New Urbanism
  - Colorado League of Women Voters presentation on I-70 project cost comparisons
  - Letter to the Editor from the League of Women Voters (also included in un-authored report)
I believe my conclusions are supported, in effect, by two other documents directly related to this same issue of I-70; one is another comment on file in this matter which I have endorsed, titled The Supplemental Draft EIS For Proposed Expansion of I-70 East Must Be Revised To Adequately Disclose Impacts of Emissions On Community Health And Air Quality, by Robert E. Yuhnke; the other, so far as I know, is not entered as a comment to CDOT but is directed to this same issue and is published by the American Planning Association Transportation Planning Division, I-70 East Reconstruction - Denver, Colorado, Peer Review and White Paper, October 15, 2014, which I can send to you at your request. I incorporate both of these documents by reference herein.

As background information, I am a retired lawyer, Pueblo native, A.B. Harvard College, LL.B. Stanford Law School, Pueblo Deputy District Attorney, Colorado State Representative (JBC 4 years), State Senator, Chief Deputy State Public Defender, Attorney General and Denver Manager of Safety. Currently I am a Denver County Colorado Master Gardener and volunteer CMG at the Jeffco Plant Clinic at the CSU Jefferson County Extension Office at the Jeffco Fairgrounds in Golden.

I live in the northeast quadrant of Denver, Park Hill, approximately 3 miles from the intersection of Colorado Blvd. and I-70. During growing season I go to and from Jefferson County on I-70 as often as once a week or
more, usually during the morning and evening rush hours. Although I-70 is faster, the 6th Avenue (U.S. 6) freeway is shorter but the rush hour traffic to and from 6th Avenue and Santa Fe/Kalamath to and from my residence generally takes longer than the I-70 route.

I have attended a number of meetings and obtained additional information from CDOT and Unite North Metro Denver concerning the proposed reconstruction of I-70 through east Denver and CDOT’s preferred alternative involving Globeville, Elyria and Swansea (GES). Being bisected by I-70 for 50 years, these neighborhoods have had to put up with the lack of connectivity, noise and air pollution emissions from passing traffic. I have often wondered why the I-70 route was not originally aligned to join I-76 as part of I-70 avoiding the disruption of Denver neighborhoods.

Multiple problems are caused by CDOT’s insistence on reconstructing the eastern part of I-70 instead of realigning it with I-270 and I-76. CDOT claims that alternative would at least double the cost of its preferred alternative. CDOT refuses to detail how they arrived at that conclusion. The CDOT claim is not credible for that and for the following reasons:

1. **Financing:** As stated above, CDOT claims that its preferred alternative would cost less than moving !-70 to the I-270/I-76 alignment. Unite North Metro Denver thinks the cost would be considerably less than CDOT’s preferred alternative. Unless CDOT provides the itemized details of its assertion that it will cost more than its preferred alternative that claim cannot be accepted. CDOT already owns the right of way on the I-270/I-76 alignment and there is room for an additional 2 lanes (currently 4 lanes);

2. **Environmental justice:** Moving I-70 north enables reconnecting the neighborhoods that were severed by the I-70 corridor and frees them from the negative impacts of I-70;

3. **Truck traffic:** Moving I-70 north removes the noise and pollution caused by vehicular emissions, particularly from truck traffic, along the current I-70 corridor;

4. **Swansea Elementary:** Moving I-70 north removes all the problems that the school now has with its proximity to I-70;

5. **Property impacts:** Moving I-70 north would enable a new boulevard on 46th Avenue east of I-25 and on 48th Avenue west of I-25.
Property values adjacent to the I-70 corridor would increase due to greater accessibility to the reunited neighborhoods.

6. **Hazardous materials:** Moving I-70 north avoids the problems raised by the CDOT preferred alternative with removal of contaminated soil in the deep trench proposed and avoids toxic emissions from truck and construction equipment involved in the trench excavation and removal and disposal of contaminated soils;

7. **Historic:** Denver neighborhoods divided by I-70 were historic neighborhoods. Restoring their cohesiveness by moving I-70 to the I-270/I-76 alignment will be a huge benefit to the residents with the elimination of that massive barrier after the five decades of being split apart and will restore their historic status;

8. **Noise:** Moving I-70 north avoids the noise that would be created by CDOT’s preferred alternative of trenching and covering I-70 past Swansea Elementary School and the noise that vehicles create on the I-70 corridor;

9. **Preliminary Identified preferred alternative:** Moving I-70 to the I-270/I-76 alignment would eliminate this alternative together with its cost and disruption during construction;

10. **Air Quality:** Moving I-70 north will immediately improve the air quality on both sides of the existing I-70 corridor. The sources of pollution and emissions will be moving along a route that is removed from the existing corridor and is not in proximity to adjacent neighborhoods.

11. **Visual:** In addition to the removal of the I-70 corridor from its current location, the vacated land can be made available for tree-lined boulevards with greenery and a renewal of the area vacated with good architectural designs is possible. What is now a desolate stretch of concrete, asphalt and steel can become an enticing entry into Denver from Denver International Airport.

12. **Other:** The list is virtually endless with possible improvements to the vacated I-70 corridor through Denver. The project could become a rebirth of the Denver Dream created by Mayor Speer, with a magnificent boulevard showing off Denver and its spectacular mountains on the way in from DIA and the west Denver neighborhoods. Finally, the only practical option for
rerouting I-70 traffic during construction of the extra lanes, trench and cover is to divert all traffic north to the I-270/I-76 route. It is clear that would require adding two lanes to I-270 and possibly to I-76 since existing traffic on I-270 is jammed during both morning and evening rush hours now. The obvious question is, why not choose the I-270/I-76 alignment as the permanent route for E-70 now?
Re: Public Hearing: Comments on
DRCOG 2040 Fiscally Constrained Regional Transportation Plan

Comments by Albert G. Melcher, MS, Captain, Civil; Engineer Corps, USNR retired.
Transportation Chair ex Officio, Sierra Club Rocky Mountain Chapter. (I am one of
three persons who have served on both the CDOT Commission and the RTD Board,
and am a former member of the DRCOG Transportation Advisory Committee.)

My comments deal with the CDOT Draft EIS and Preferred Alternative for I-70 in
Northeast Denver.

I-70 should never have been built where it is. There was a late-1950s plan with
expressways crisscrossing Denver and slicing through and near the CBD. It included I-70.
This plan was defeated by citizen reaction in the mid-1960s but only after I-70 was
built. The routing through low-income ethnic minority neighborhoods which did not
generate competent citizen organization enabled this construction. The rest of the plan
was defeated by citizen opposition, one outcome of which was the founding of RTD in
1969. I-70 was built just before the Civil Rights Act and before USDOT laws and
regulations on Environmental Justice were enacted. These speak to avoidance of
adverse effects on public health, “bodily impairment” and community socio-economic
quality and integrity.

This I-70 wound to the neighborhoods occurred in the period when highways engineers
suffered from the “Robert Moses” mentality whereby highways must dominate over
humanistic urbanization values of neighborhood integrity, and health – both physical
and socio-economic. In the 1960s, the entire nation was awakening to the
irresponsibility of that philosophy. A present Metro Vision Plan goal is to “protect the
quality of life that makes the region such an attractive place to live, work, play, and raise
a family”; this was not a consideration in those days.
This wound is being expanded now, even with new band-aids of lowering and covering part of it, and this perpetuates the mistakes of the past. It does not rectify the wrong-doing of the past.

I was involved in the I-70 EIS Citizen Committee in the last decade and I was appalled by CDOT’s deliberate squashing of health and air quality impact studies as well as the concerns with community well-being and cohesion. In this decade, there has been no meaningful change at CDOT. Its mandated and limited mission is to address transportation and vehicular mobility and of course the vast majority of travel is automotive.

There is one overarching national law to rectify this condition: it is the National Environmental Policy Act (NEPA), our environmental Magna Carta. Tragically, CDOT continually abuses this: I have been involved in a number of CDOT EIS’s in recent years where this is evident.

CDOT’s mandate is not to enhance community structure, health, socio-economic quality and assets. These matters are essentially left to programs such as DRCOG, which states: “The 2040 RTP elements play a major role in improving the quality of life, economy, environmental quality, and mobility for the residents of the Denver region. Potential benefits of the 2040 RTP’s balanced approach include: ‘People breathe clean air.” Presumably, clean air is safely free of non-regulated chemicals such as carcinogens from internal combustion engines. Further, DRCOG states in the RTP that recommendations contained within the 2040 RTP should not have disproportionate adverse impacts (such as air pollution,) on the low-income or minority communities.

DRCOG needs to disapprove the I-70 plan and let CDOT know that it must utilize the law and wisdom of NEPA and conduct the proper study of alternatives to its current Preferred Alternative. Viable alternatives have been ignored in CDOT’s predetermined outcome process. Community structure, public health, socio-economic values and well-being of the citizenry must be the dominant decision criteria; transportation is but
another subservient utility in the regional fabric. Legal abuse of NEPA should be prevented in the name of good governance and morality.

Bert Melcher  
Albert G. Melcher MS Captain Civil Engineer Corps USNR Retired  
Transportation and Environment Policy Consulting  
13801 East Yale Avenue Apt. 326  
Aurora CO 80014  
Phone 720-748-2405  a.melcher@comcast.net  
"The ultimate test of a moral society is the kind of world it leaves to its children." - - Dietrich Bonhoeffer, Protestant theologian hanged by Nazis in 1945.
COMMENTS ON THE ADDITION OF THE PROPOSED I-70 EXPANSION PROJECT TO THE DENVER REGIONAL TRANSPORTATION PLAN and TRANSPORTATION IMPROVEMENT PROGRAM

The Rocky Mountain Chapter of the Sierra Club submits these comments asking the Board of the Denver Regional Council of Governments (DRCOG) not to add the currently proposed 10-lane cut-and-cover version of the I-70 expansion project to the Regional Transportation Plan (RTP) unless operational limits on trucks are adopted to protect the health of residents in communities with close proximity to the highway alignment between Brighton Blvd and Colorado Blvd.

The Federal-Aid Highway Act authorizes metropolitan planning organizations to include operational practices and mitigation in RTPs to protect environmental resources. These provisions provide authority to ensure that emissions from a project will not cause violations of a National Ambient Air Quality Standard that would cause an area such as Denver to become nonattainment under the Clean Air Act for a highway-related pollutant. Emissions from an expanded I-70 with 30% more traffic than in 2015 are highly likely to cause violations of the NAAQS for PM2.5. If those violations occur, the Denver region will be subject to growth limitations and the obligation to develop control strategies designed to eliminate the violations. It would be much less burdensome for the region to adopt a preventive approach to ensure that NAAQS violations will not occur, and that the public will be protected from the severe adverse health outcomes that will be caused by exposing nearby residents to hazardous pollution levels.

I. Health Impacts Of Exposure to Air Pollutants Emitted from I-70 are Severe, and Should be Addressed in the Planning Process.

Various provisions of federal transportation planning law require that Metropolitan Planning Organizations (MPOs) consider the air pollution effects of the projects included in a regional plan, and evaluate mitigation measures that can minimize these effects. These include the statutory duty to adopt a plan that “accomplishes” the planning objective to “minimize air pollution,” 23 U.S.C. section 134(c), the duty to consult with regulatory agencies regarding the air pollution effects of projects in a plan, section 134(i)(5), and the authority to adopt mitigation measures to preserve environmental quality, section 134(i)(2)(D).

The need for consideration of I-70 project mitigation as part of the regional planning process is driven by two factors: 1) the failure of CDOT to adequately address project emissions in the NEPA process; and 2) the authority given to DRCOG by the Federal Aid Highway Act to adopt operational measures to improve system performance that can also significantly reduce air quality impacts in the I-70 corridor.

A. Health Impacts Are Occurring and Should be Reduced.

Evidence documented by Denver Environmental Health showing disparate health outcomes for residents in the Globeville/Elyria/Swansea neighborhoods and the city council districts where I-70 is located compared to other council districts in Denver, including a 50% higher incidence of mortality related to cardiovascular disease, 50,000 more years of life lost annually, and 40% greater rate of hospitalization of children for asthma, demonstrate that these residents are
disproportionately affected by the diseases of air pollution. The contribution that emissions from current vehicle travel on heavily trafficked highways such as I-70 make to these adverse community health outcomes must be evaluated, disclosed to decisionmakers and the public, and considered in the evaluation of alternatives to determine the extent to which community health can be enhanced by not increasing exposure to traffic pollution in these neighborhoods.

Both emissions from an expected 30% increase in traffic traveling in the I-70 Project area, and emissions during construction of the project from heavy equipment, could cause violations of national ambient air quality standards (NAAQS) in the Project area. The Clean Air Act (CAA), Part C, requires that States adopt an implementation plan containing control measures to prevent violations of NAAQS in areas that currently attain the NAAQS. If violations of these air quality standards occur, the CAA requires that the plan for the area be revised to reduce ambient concentrations below the level of the NAAQS. 40 CFR §51.160. Violations trigger obligations to develop and implement a control strategy to eliminate the NAAQS violations, and imposes limitations on the permitting of new or modified sources. Preventing violations of the NAAQS protects public health by avoiding pollutant concentrations known to be harmful, is cheaper than requiring emission reductions after violations occur, and is less burdensome on other emission sources.

Had these impacts of traffic and construction emissions on ambient concentrations of PM2.5 and mobile source air toxic pollutants been included in the Supplemental Draft EIS for the Project, DRCOG might reasonably have relied upon that work to make decisions about appropriate mitigation. However, they were not addressed in the EIS. Therefore DRCOG has an obligation to assess and disclose these impacts as part of its duty to “minimize air pollution” and consider mitigation measures.

B. Consideration of Alternatives and Mitigation Measures to Reduce Public Exposure to Harmful Pollutants, and to Ensure Attainment of NAAQS Required as Part of the Regional Planning Process.

CDOT contends in the SDEIS for the Project that the proposed Project is proposed to accommodate at least a 30% increase in traffic and related increases in pollutant exposures in an area where traffic pollution is currently contributing to adverse health impacts in nearby communities. Not included in the analysis are reasonable alternatives and mitigation measures that enhance the human environment by reducing public exposure to these harmful pollutants. At a minimum, the SDEIS must include an evaluation of measures such as, but not limited to, diverting future traffic to other interstate alignments (I-76 and I-270) where commercial and industrial uses are the predominant near-highway land use, dense urban neighborhoods are not in close proximity to the highway, and schools are not located next to the highway right-of-way. So long as the currently proposed cut-and-cover alternative in the existing I-70 alignment remains the preferred alternative, another option that must be included is the buy-out of all nearby residents, and the re-location of school buildings located within the zone of adverse health impacts adjacent to the Project alignment.

The SDEIS is not adequate under the National Environmental Policy Act (NEPA), or under the requirements of the Federal Aid Highway Act, 23 USC § 109(h), because the Draft Statement, along with the Air Quality Technical Report prepared as Attachment J for the I-70 East SDEIS, fails to –
1. investigate and disclose the impact that highway emissions are having on community health in the Project study area;
2. investigate and identify alternatives and/or mitigation measures that can enhance the human environment by reducing community exposure to harmful air pollutants, and avoid the adverse health effects that will result from increasing exposure to these pollutants that will result if traffic in the corridor is allowed to increase by 30%;
3. investigate and disclose likely violations of the NAAQS for PM2.5 and NO2 caused by those pollutants emitted from vehicles traveling on the completed project and in the area affected by the Project;
4. use credible scientific methods to investigate and disclose likely violations of the NAAQS for PM-10 caused by particulate matter (PM) emitted from or by vehicles traveling on the completed project and in the area affected by the Project;
5. investigate and disclose likely violations of the NAAQS for PM-10, PM2.5 and NO2 caused by those pollutants emitted from heavy equipment and traffic during construction of the Project;
6. investigate and identify alternatives and/or mitigation measures that are necessary and sufficient to prevent or avoid violations of the NAAQS for PM-10, PM2.5 and NO2;
7. demonstrate compliance with the obligations imposed by the Federal-Aid Highway Act, 23 USC §109(h), to estimate the costs of mitigation, compare those costs with the transportation benefits of the proposed Project, determine whether the Project is in the best overall public interest, and commit to implement any necessary mitigation; and
8. include a conformity determination for the Project as required by § 176(c) of the Clean Air Act (CAA) and implementing regulations. 40 CFR §§ 93.116, 123.

1. Impact on Community Health of Emissions from Traffic on I-70 Not Assessed or Disclosed by CDOT.

Overall impacts of air pollutants emitted from the Project on community health are the primary concern of this comment. The adverse health outcomes among residents in the I-70 Project area reported by Denver Environmental Health [DEH] in the community health status report released last month demonstrate that these residents are currently experiencing serious adverse effects of current pollutant exposures, and that the impact of future increases in pollutant exposures must be fully disclosed in the EIS. See https://www.denvergov.org/Portals/746/documents/HIA/HIA%20Composite%20Report_9-18-14.pdf. The higher pollutant exposures expected from increasing traffic by 30% in these neighborhoods will significantly further degrade the health status of these communities. Sacrificing the health of children and increasing years of life lost to build a regional transportation facility is not an acceptable public policy. To ensure open disclosure and consideration of the consequences that Project emissions will have on health, a health impact assessment must be included in the current NEPA review because of the evidence provided by DEH showing that residents in these communities are now experiencing disparate health outcomes compared to other communities in Denver.

The SDEIS contains no discussion of the current health status of these communities, and no investigation of the likely impact that increased vehicle emissions will have on community health. The impacts that Project emissions will have on air quality in the affected communities are only partially addressed. The SDEIS includes modeling to estimate future concentrations in the ambient air for only two transportation-related pollutants: PM-10 and carbon monoxide. The other two criteria pollutants emitted from highways that EPA has identified as having the
greatest impact on nearby community health, and has recently required be monitored adjacent to highways, PM2.5 and NO2, are not evaluated for impact on future air quality. A shorthand method for using the modeled concentrations of PM-10 to estimate future PM2.5 concentrations indicates that Project emissions will worsen health status in the communities by violating the NAAQS for PM2.5.

In addition to determining the impact of Project emissions on the attainment of the NAAQS, the SDEIS should have included an assessment of the health impacts on the community that will result from the full mix of criteria and toxic air pollutants emitted from motor vehicles. Residents do not just breath one pollutant at a time, and the adequacy of national air quality standards to protect health do not account for the cumulative and synergistic effects on human health that result from exposure to the full array of criteria and toxic air pollutants emitted from highways.

2. Adverse Health Outcomes Are Occurring Disproportionately in Communities Affected by I-70 Pollution.

The final DEH report identifies four metrics of health as demonstrating a significant disparity between community health in the four city council districts where I-70 is located, and especially Globeville/Elyria/Swansea (GES) neighborhoods, and other parts of Denver: 1) mortality caused by cardiovascular disease, 2) hospitalization of children for asthma, 3) cancer, and 4) obesity. In addition, the draft DEH report identified years of life lost as another important metric of community health which was significantly worse in the GES neighborhoods compared to the city as a whole.

i) Disproportionately High Cardiovascular Mortality.

The data reported by DEH , HIA, Fig. 6, show that residents in the four city council districts where I-70 is located.(1, 8, 9, and 11) have the highest cardiovascular mortality rates. Residents in city council Dists 1 and 9 experience 30% greater cardiovascular mortality than dist 2 (213 vs. 155). In districts 8 and 11, respectively, cardiovascular mortality is 77% higher than dist 2 (275 vs. 155), and 74% higher (270 vs. 155). On average, cardiovascular mortality in these four council districts along I-70 is roughly 50% greater than other parts of the city. These are remarkably huge differences in cardiovascular mortality, the largest single cause of death in Denver and the U.S.

Increased community exposure to Project emissions will occur primarily in Districts 9 and 8. District 9 includes the GES and other neighborhoods along the east side of I-25 from the Auraria campus to the Commerce City line, including the neighborhoods along I-70 east of the mousetrap. The mortality rate in council district 9 is identical to the rate in council district 1 (213/100,000). District 1 includes the neighborhoods on the west side of I-25 from the Auraria campus north to the city line, including the neighborhoods along I-70 west of the mousetrap. Together, these two districts have significantly higher cardiovascular mortality rates than all other council districts except 8 and 11. In addition to emissions from I-70, residents in Dists 1 and 9 are exposed to emissions from I-25, residents in Dist 8 are most exposed to the additional pollution burden coming from the refineries, and district 11 is most exposed to emissions from the I-225 interchange, Pena Blvd and airport operations. A recent study at LAX indicates that residents along the path of aircraft take-offs and landings are exposed to aircraft emissions that are roughly comparable to the emissions from highways in these neighborhoods. It makes sense that all 4 of these council districts show greater rates of the diseases of air pollution,
including cardiovascular disease, when compared to other council districts not exposed to emissions from major highways and other high emitting sources.

These data point an incriminating finger at air pollution from the high traffic volumes on interstate highways because all the council districts with higher pollution levels from both interstates and major stationary sources have elevated cardiovascular mortality rates. If higher mortality were observed only in one district, then air pollution could not account for the disparity between that district and both cleaner districts and districts with high pollution levels.

**ii) Disproportionately Higher Years of Life Lost.**

These massively greater mortality rates obviously contribute to increased years-of-life-lost. Missing from the final DEH report, but no less relevant to the need for a NEPA analysis of health risks, is the discussion of years-of-potential-life-lost (YPLL) that was included in the draft HIA, at p. 9 (published for comment in April). The draft described this metric as commonly "used as an indicator of health equity. Generally, this is a measure of premature death before the age of 75 compared across a population or geographic area. The assumption is that a higher number indicates inequitable social or physical determinants of health. Data from Denver Health indicate that "years of potential life lost" is higher in Globeville and Elyria Swansea than in Denver overall." The draft reported that years-of-life-lost, averaged across the community, is 3.5 years greater for the residents of GES neighborhoods compared to other Denver residents. This means residents of these neighborhoods are losing 50,000 years of life annually compared to other Denver neighborhoods. Deletion of this metric in the final HIA is not explained anywhere. Purging this critical metric of community health from the report makes the report less valuable to residents and decisionmakers because of its importance as a measure for comparing community health among neighborhoods.

The fact that this key metric was deleted without explanation is highly suspicious. Without any explanation, the motive for removing this important metric must be questioned especially since Thad Tecza was told by staff at DEH before the release of the final report that there would be no changes in the data included in the final compared to the draft. The lack of any explanation suggests an intent to deceive the public, and smacks of cover-up. This omission from the final DEH report further highlights the need for these disparate health outcomes to be explored in an EIS.

**iii) Disproportionately Higher Hospitalization of Children for Asthma.**

The other adverse health outcome for which the disparity between the GES neighborhoods and other areas of the City is quantified is hospitalization for childhood asthma. The final DEH report, Fig. 7, shows 40% greater incidence (38.6 vs. 28.5 admissions/1,000) of hospitalization of children in Elyria/Swansea, and 20% higher in Globeville than the rest of the city. The additional emissions from the train traffic on the main line running between Elyria and Swansea is a plausible explanation for the higher incidence in these neighborhoods. Certainly 40%, and even 20% more children hospitalized for asthma is a significant adverse health outcome for a community that also suffers from other adverse social and economic factors.

The facts that 1) the GES neighborhoods have 3.5 years shorter longevity, or 50,000 years of life lost, compared to the rest of Denver (which was shown by the YPLL data presented in the draft report, but purged from the final), 2) the residents in the districts along the I-70 corridor experienced 50% higher cardiovascular mortality than other parts of the city, and 3) that
significantly more children in GES neighborhoods require hospital care for asthma strongly suggests that these adverse health outcomes are linked to air pollution. There is enough variability in socio-economic factors across the four council districts that comprise north Denver that socio-economic factors alone cannot account for higher cardiovascular mortality rates in all four I-70 districts. Some other extrinsic factor, such as air pollution, must be a causative factor.

3. The Disparate Adverse Health Outcomes Observed in Communities Along the I-70 Corridor Are Causally Related to Exposure to Traffic Pollutants.

The DEH report does not offer any explanation for these disparate health outcomes other than air pollution. Air pollution is the only environmental factor identified in the report that is causally related to these diseases. Air pollution offers the only reasonable explanation for the elevated incidence in the GES neighborhoods of the four health outcomes identified by DEH as being significantly worse than other areas of Denver. Increased mortality associated with cardiovascular disease is one of the most significant adverse health outcomes identified by EPA as associated with exposure to PM2.5. The correlation between the observed health outcome among residents in the four I-70 districts and the health outcomes predicted by the health effects data reviewed by EPA is strong. Air pollution is also the only well-documented explanation for the higher incidence of hospitalization for asthma among children. Air pollution also includes indoor air pollution from smoking and other sources in the home, so not all of it comes from highways. But the health effects research reviewed by EPA includes studies showing the prevalence of childhood asthma is linked to increased exposure to air pollution from major traffic corridors. The HIA provides no evidence to show that smoking in the home differs enough between council districts to explain the significantly greater hospitalization of children for asthma.

i) DEH Report Identifies Air Pollution As Causally Linked to Disparate Health Outcomes.

The DEH report does not offer any other explanation for these disparate health outcomes. Along with air pollution, the DEH report lists possible environmental factors contributing to adverse health outcomes -- noise from trains, traffic and industry, elevated summertime e-coli in the S. Platte, and soil contamination. See HIA, Environmental Quality, p. 19. But the report notes that soil contaminants have been removed from the community as part of the CERCLA clean-up of the areas around the former smelters. The HIA offers no plausible explanation for how these remaining environmental factors other than air pollution are linked to the adverse health outcomes that demonstrate worsened health for residents in the GES neighborhoods compared to other parts of Denver. EPA's analysis of the effects of air pollutants on health in the Integrated Science Assessments for PM and NO2 provides a scientific basis for linking PM to all of these adverse health outcomes, and NO2 to some of them. But none of the other environmental risk factors identified in the DEH report have any apparent causal relationship to these adverse health outcomes. For example, noise has never been identified as a cause of childhood asthma, and e-coli in the river is not linked to pre-mature mortality from cardiovascular disease. The only environmental factor listed in the report that is known to be associated with these diseases is air pollution.

Of the sources of air pollution in these neighborhoods, the HIA states: "Vehicle exhaust is the main source of air pollution in Denver." "The [GES] neighborhoods are close to sources of air pollution from vehicles on I-70 and I-25, which carry approximately 150,000 and 250,000
vehicles per day respectively, and are the main sources of air pollution. Stationary sources such as industrial plants also impact air quality.” HIA, pp. 20, 19. The report claims that the highest traffic density in the city is downtown, but CDOT traffic measurements show that the highest traffic density in the metro area is actually at the mousetrap, in the center of Globeville and upwind of Elyria and Swansea where 326,000 vehicles pass through daily.

The communities near the mousetrap are exposed to the highest pollutant levels in Colorado. At the mousetrap the total daily trips passing through the interchange are 326,000, more than 30 percent more traffic than any other location in the state. Traffic counts reported by CDOT for 2012 show AADT at the mousetrap as (truck share shown in parenthesis)\(^1\)

I-25 south of interchange: 243,000 (9.1%)
I-25 north of interchange: 198,000 (10.9%)
I-70 west of interchange: 150,000 (9.1%)
I-70 east of interchange: 140,000 (9.3%)

Especially important is the fact that the share of AADT represented by truck trips at the mousetrap is much higher than at other locations along I-25. CDOT’s data show that approximately 40 percent more truck trips use the I-25 segments north and south of the mousetrap than on I-25 south of downtown at 8th Avenue. Together, the higher AADT and the greater number of truck trips show that the mousetrap is the location in the Denver CBSA where mobile source emissions are the highest.

In addition, regional air quality monitor data received by EPA from the CDPHE, Air Pollution Control Division, and reported on EPA’s Air Data website, demonstrate that cumulative effect of traffic emissions combined with industrial pollution is greatest along the interstates. Monitored levels of total particulate matter pollution from all sources in the metro area are highest at the Birch Street monitoring station in Commerce City, located about 2 miles north of Denver city line, and 1.25 miles east of the I-76/I-270 interchange. In the SDEIS, CDOT determined that the pollution levels reported at this monitor are representative of background levels to which I-70 will add emissions from the highway.

Thus when total pollution burden (highway emissions plus existing background) is considered, the neighborhoods along I-70 experience the highest pollution concentrations in the metro area. Therefore it is consistent with the air quality data for the most adverse health outcomes to be observed in the four council districts where I-70 is located.

**ii) EPA Finds Causal Relationship Between Exposure to Traffic Pollutants, Cardiovascular Disease, Pre-Mature Mortality, Asthma and other Adverse Health Outcomes Observed in the I-70 Corridor.**

The U.S. Environmental Protection Agency (EPA) has now identified four criteria pollutants emitted from highways as presenting significant health risks that must be prevented through attainment of the NAAQS near highways: carbon monoxide (CO), PM-10, PM2.5, and nitrogen

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oxides (NO2). This public health concern is reflected in requirements that states must now establish roadside monitors for PM2.5 and NO2 in addition to the long-standing requirement to monitor CO. In addition to these four mobile source-related criteria pollutants, EPA has identified 92 mobile source air toxic (MSAT) pollutants. MSATs are governed by technology-based standards that must be met in emissions from tailpipes, but are not governed by ambient air standards that limit the concentrations of pollutants to which the public may be exposed. None of these standards take into account the interactions among these pollutants in the ambient air, or their cumulative impact on human health.

Together, these pollutants create a hazardous pall of pollution in the neighborhoods around highways that has been shown to contribute to cardiovascular and respiratory diseases among children, adults and the elderly that 1) increases the need for hospital and urgent care, 2) causes pre-mature death that significantly shortens the lives of residents, 3) increases the prevalence of asthma among children which interferes with school attendance and education, and requires medical treatment and hospitalization, 4) interferes with normal lung development in children and adolescents that results in permanent, lifetime impairment of lung function, 5) increases the incidence of debilitating or fatal cancers, and 6) impairs immune function.

In its recent reviews of the adequacy of the NAAQS for PM2.5 and NO2, EPA has identified causal relationships between exposure to these pollutants and many of the adverse health outcomes associated with exposure to highway pollutants. In its review of the health effects literature available through 2009 as part of the Agency’s determination to make the NAAQS for PM2.5 more protective, EPA found [bold in original] –

- “a causal relationship exists between short-term exposures to PM2.5 and mortality.”
- “a causal relationship exists between long-term exposures to PM2.5 and mortality.”
- “a causal relationship exists between short-term exposures to PM2.5 and cardiovascular effects.”
- “a causal relationship exists between long-term exposures to PM2.5 and cardiovascular effects.”

Although EPA did not attribute these effects exclusively to fine particles emitted from motor vehicles, EPA did cite studies that establish a causal relationship between exposure to traffic PM, or one or more components of traffic PM emissions, and pre-mature mortality and emergency treatment for cardiovascular outcomes. For example, “multiple outcomes have been linked to a PM2.5 crustal/soil/road dust source, including cardiovascular mortality”; “studies have reported associations between other sources (i.e., traffic and wood smoke/vegetative burning) and cardiovascular outcomes (i.e., mortality and ED visits)”; “Studies that only examined the effects of individual PM2.5 constituents found evidence for an association between EC and cardiovascular hospital admissions and cardiovascular mortality”; “studies found an association between mortality and the

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2 40 CFR Part 50.
4 Integrated Science Assessment for Particulate Matter (US EPA, December 2009), pp. 2-10, 2-11, 2-12.[hereinafter ISA for PM]
5 Note that “EC” is short-hand for “elemental carbon” which is primarily unburned carbon from fossil fuel combustion, and is a significant component of fine particles emitted from diesel and gasoline engines.
PM2.5 sources: . . . , traffic”; “recent studies have suggested that PM (both PM$_{2.5}$ and PM$_{10-2.5}$) from . . . road dust sources or PM tracers linked to these sources are associated with cardiovascular effects.”

In addition, EPA cited studies demonstrating a causal relationship between exposure to PM2.5 and childhood asthma: “road dust and traffic sources of PM have been found to be associated with increased respiratory symptoms in asthmatic children and decreased PEF in asthmatic adults.”

EPA also found a causal relationship between exposure to NO$_2$ and childhood hospitalization for asthma:

“In addition, EPA cited studies demonstrating a causal relationship between exposure to PM2.5 and childhood asthma: “road dust and traffic sources of PM have been found to be associated with increased respiratory symptoms in asthmatic children and decreased PEF in asthmatic adults.”

EPA also found a causal relationship between exposure to NO$_2$ and childhood hospitalization for asthma:

“Epidemiologic evidence exists for positive associations of short-term ambient NO$_2$ concentrations below the current [1983] NAAQS level with increased numbers of ED visits and hospital admissions for respiratory causes, especially asthma. These associations are particularly consistent among children and older adults (65+ years) when all respiratory outcomes are analyzed together, and among children and subjects of all ages for asthma admissions.”

More recent studies not available for EPA’s 2008 ISA for Oxides of Nitrogen, or 2009 ISA for PM, confirm and strengthen these associations. All of the relevant research currently available that establishes the relationship between exposure to traffic pollution and the adverse health outcomes occurring in residents living along the I-70 corridor, including cardiovascular disease, pre-mature mortality, childhood asthma and cancer, should be included in an assessment of the relationship between adverse health outcomes observed in the I-70 Project area and traffic pollution.

iii) EPA Finds No Threshold for Safe Exposure to Highway Pollutants.

In addition to EPA’s findings that there is a causal relationship between the mobile source-related pollutants emitted from highways and the disparate health outcomes reported by DEH in the communities along I-70, EPA also found that there is no safe level of exposure to these pollutants. In the ISA for PM, at p. 2-25, EPA concluded that “evidence from the studies evaluated supports the use of a no-threshold, log-linear model.” EPA reached a similar conclusion with respect to NO$_2$: “In studies that have examined concentration-response relationships between NO$_2$ and health outcomes, the concentration-response relationship appears linear within the observed range of data, including at levels below the current standard. There is little evidence of any effect threshold.”

[Emphasis in original.]

The most critical implication of these findings for purposes of assessing health impacts under NEPA is that evidence showing that concentrations of PM2.5 and NO$_2$ are below the NAAQS for these pollutants cannot be relied upon to support a conclusion that exposure to existing concentrations of each of these pollutants is not contributing to the adverse health outcomes being observed in the near-highway communities along I-70.

However, no determination of pollutant exposures for near-highway communities can be made from information provided in the SDEIS because only background concentrations for PM-10 and CO are provided from a monitoring station outside the Project area, and no near-highway measurements are provided for any of the four mobile source-related criteria pollutants.

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6 ISA for PM, p. 2-26.
7 Id.
9 ISA for Oxides of Nitrogen, p. 5-15.
4. Existing Adverse Health Outcomes in I-70 Project Area, and Likely Increase
Adverse Health Outcomes from Higher Project Emissions, Not Adequately
Disclosed by Modeling for Attainment of PM-10 and CO NAAQS.

The SDEIS air quality analysis is not a surrogate for a comprehensive health impact
assessment because 1) the NAAQS are not an adequate surrogate for the health effects
associated with exposure to the full array of pollutants emitted from highways, and 2) the
modeling reported in the Air Quality Technical Report only includes two of the four NAAQS that
establish limits on ambient concentrations of mobile source-related pollutants. Evidence
provided in the SDEIS, but not analyzed or discussed for decisionmakers or the public, strongly
suggests that Project emissions will cause the NAAQS for PM2.5 to be violated. Other highway
pollution data suggest that the NAAQS for NO2 may be violated by Project emissions as well.
Emissions of these pollutants from the Project must also be modeled to determine if these
NAAQS will be violated.

i) NAAQS Not a Surrogate for Overall Highway Pollutant Exposures.

All the air pollutants emitted from mobile sources in the I-70 corridor contribute to the adverse
health effects experienced by residents in the neighborhoods along I-70. These include the four
mobile source related criteria pollutants governed by a NAAQS pursuant to section 109 of the
CAA, and the mobile source air toxic (MSATs) pollutants regulated pursuant to section 202(l).

EPA has listed pollutants as MSATs that cause chronic adverse health effects, such as cancer,
and acute effects from short-term exposures (hours or days) such as asthma attacks. Congress
listed benzene, 1,3 butadiene and formaldehyde as mobile source-related air toxics in the 1990
CAA amendments when it required EPA to set vehicle emission standards for these pollutants.
Id. EPA included these three statutory MSATs and ten other mobile source-related toxic
pollutants on a list of 33 priority pollutants targeted for control under EPA’s Integrated National
Urban Air Toxics Strategy. 64 Fed. Reg. 38,706 (July 19, 1999). This Strategy “established a
list of urban HAPs [‘hazardous air pollutants’] which pose the greatest threats to public health in
urban areas, considering emissions from major, area and mobile sources.” Id. at 38,714. EPA
observed that “mobile sources are an important contributor to the urban air toxics problem.” Id.
at 38,705.

The neighborhoods near I-70 suffer from some of the worst air in the state. More than half a
million pounds of toxics were released into the air in Globeville, Swansea, and Elyria in 2012,
according to EPA’s Toxics Release Inventory – more than any other zip code in Colorado, and
more than 20 percent of the state’s total toxic air releases.10 Denver County as a whole suffers
from some of the worst diesel particulate pollution in the entire nation – ranking 9th out of the
3,109 counties nationwide. The lifetime cancer risk from diesel soot in Denver exceeds the risk
of all other air toxics tracked by EPA. Diesel soot is a major component of PM2.5 near
highways, and is a major source of the health risks linked to breathing fine particles. The
average lifetime diesel soot cancer risk for a resident of Denver County is 1 in 1,938, which is

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10 EPA’s TRI website at: http://www2.epa.gov/toxics-release-inventory-tri-program using zip
code 80216.
516 times greater than the EPA’s acceptable cancer level of 1 in a million.\textsuperscript{11} This diesel pollution is likely most concentrated at the mousetrap, where Colorado’s two most heavily traveled highways – I-70 and I-25 -- intersect.

EPA’s findings that exposure to MSATs poses serious threats to public health were significantly enhanced by research conducted by the South Coast Air Quality Management District to monitor and model exposures to 31 urban toxic air pollutants in the Los Angeles air basin. Four studies have now been completed in a series known as the \textit{Multiple Air Toxics Exposure Study} (MATES). Beginning with MATES-II (March 2000), the measurements of toxic air pollutants in the ambient air throughout the Los Angeles basin provided compelling new evidence that the cancer risk attributable to public exposure to ambient concentrations of toxic air pollutants is much higher than had been previously suspected, and is attributable primarily to mobile source emissions. The total cancer risk from all sources, including traffic (“on-road mobile”), non-road mobile and stationary sources, averaged across the region was found to be 1400 per million. On-road vehicle emissions account for half of this risk, or 700 per million. This equates to about 1 cancer for each 1450 exposed people.

MATES-II also demonstrated that higher levels of exposure and risk occur near highways. The study found that the range of cancer risks varied significantly across the region, from 1,120 in a million in the cleanest neighborhoods to about 1,740 in a million in the most polluted. \textit{Id.}, p. 7-1, ¶ 1. The Report found the greatest risk levels at locations where “the dominance of mobile sources is even greater than at other sites.” \textit{Id.}, ¶ 2. It also found that “model results, which are more complete in describing risk levels...than is possible with the monitored data, show that the higher risk levels occur... near freeways.” \textit{Id.}, p. ES-5, ¶ 2. “Results show that the higher pollutant concentrations generally occur near their emission sources.” \textit{Id.}, ¶ 4. These findings provide further evidence that neighborhoods near highways would experience higher concentrations than the regional averages. Based on all these observations, MATES-II concluded that “[f]or mobile source compounds such as benzene, 1-3 butadiene, and particulates associated with diesel fuels, higher concentration levels are seen along freeways.” \textit{Id.}, p. 5-9.

MATES-IV (September, 2014),\textsuperscript{12} the most recent iteration of the toxic air pollutant exposure research in the Los Angeles basin, shows significant reductions in toxic pollutant concentrations other than diesel particulate and associated cancer risks. But the most recent data does not support the conclusion that cleaner vehicles have eliminated the health risks from exposure to MSATs. The MSATs included in the study, benzene and 1,3 butadiene, “were down 35% and 11%, respectively.” But this reduction was significantly less than the reductions in air toxics emitted from stationary sources. The remaining emissions continue to present a significant health risk, especially in locales near highways and interchanges where concentrations are highest.

While diesel particles are counted as part of PM2.5 and are included in monitored concentrations, other components of diesel exhaust that include MSATs, and MSATs emitted


from gasoline vehicles are not. Emitted as gases from diesel and gasoline vehicles, other MSATs include benzene, formaldehyde, 1,3 butadiene, and the other hazardous air pollutants listed by EPA in its Urban Air Toxics strategy. The AQ Technical Report lists some of these MSATs, and provides estimates of the reductions in these pollutants expected by 2035. However, the SDEIS does not link current emissions to the community exposures that are contributing to adverse health outcomes in nearby communities, and makes no effort to estimate the residual impact that the emission of these pollutants will have on human health during the 20 years after the Project comes into service.

The DEH report, Fig. 11, provides compelling proof that traffic emissions cause benzene pollution levels that are 3 to 5 times higher in neighborhoods near the interstates than in other areas away from major highways. [In response to inquiry, Gregg Thomas at DEH informed me that the units in Fig. 11 are modeled benzene concentrations.] This pattern of elevated exposure to a potent carcinogen near highways is likely typical of other MSATs emitted from highways. These modeling results provide a local example of the exposures that contribute to adverse health outcomes in these neighborhoods.

In its 2009 comments on the DEIS, EPA flagged this omission as a major flaw in the DEIS. As the results of the latest MATES report shows, the health risks associated with exposure to MSATs remain significant. The addition of trend data in the SDEIS showing gradual reductions in future exposure to these pollutants is not enough to establish that the contribution these pollutants make to health effects resulting from continuing exposure to mobile source pollutants will no longer have a significant impact on health. Unless transportation planners can establish that no beneficial improvement in health could be achieved by implementing alternatives that remove traffic and pollution from these communities, the obligation remains to disclose the impact that future emissions of mobile source pollutants will have on community health, and to consider mitigation as part of the planning process that could eliminate or minimize those impacts.

The available evidence confirms that MSATs will continue to contribute to cumulative pollutant exposures, and future overall adverse health outcomes in communities along the I-70 corridor. These impacts are a “significant impact on the human environment” that must be assessed and disclosed under NEPA, and are also the kinds of impacts that are subject to mitigation under 23 U.S.C. section 109(h) and as part of the regional planning process under section 134(i)(2)(D).

\[\text{ii) Not All Impacts of Highway-related Pollutants on National Ambient Air Quality Standards Have Been Investigated and Disclosed.}\]

The Air Quality Technical Report (AQ Report), supplemental draft environmental impact statement (SDEIS), claims, at p. 83, that –

Motor vehicle emissions from the implementation of the No-Action and Build Alternatives in the study area have been evaluated. With the exception of PM for several of the project alternatives, the project is not expected to cause any new violations of any standard, increase frequency or severity of any existing violation, or delay timely attainment of the NAAQS.

This assertion is not correct because the AQ Report only includes modeling of expected ambient concentrations for CO and PM-10. An emissions inventory has been developed for PM2.5, but the ambient concentrations of PM2.5 have not been specifically modeled or reported. An emissions inventory has been reported for NO2, but no modeling has been conducted. No explanation is offered in the AQ Report for why PM2.5 and NO2 have not been
modeled to determine the impact that emissions of these pollutants will have on attainment of the applicable NAAQS. In addition, the claim that one Build Alternative will not violate the NAAQS for PM-10 is not credible for the reasons discussed below.

Given EPA’s findings that emissions of PM2.5 and NO2 from highways present a significant risk of causing violations of the NAAQS for those pollutants in neighborhoods near highways, and highway emissions studies that confirm those findings, emissions of those pollutants significantly impact the human environment and therefore trigger the obligation under NEPA to (i) investigate and disclose to the public and decisionmakers in the SDEIS the likelihood that emissions of those pollutants from the I-70 Project threaten to violate the NAAQS for PM2.5 and NO2, and (ii) to identify alternatives or mitigation measures sufficient to prevent or avoid any likely violations of such NAAQS. In addition, section 109(h) of the Federal-Aid Highway Act requires that any such mitigation measures needed to prevent violations of NAAQS be implemented in the ROD. As discussed in more detail in the legal section of these comments, the failure to investigate and disclose potential violations of these NAAQS, and the failure to identify such alternatives and/or mitigation measures as are necessary to prevent of avoid such violations makes this SDEIS inadequate as a matter of law.

**PM2.5 Attainment.** EPA found the highest relative risk factors for the adverse health outcomes observed in the near-I-70 neighborhoods to be associated with exposure to PM2.5 (fine particles smaller than 2.5 micrometers in diameter), also referred to as soot. This is the air pollutant emitted from diesel trucks and gasoline vehicles, and particles that result from brake and pavement wear. But the impact of PM2.5 emitted from the Project on ambient air quality are not modeled in the AQ Technical Report, and not discussed in the SDEIS.

A short-hand approach for using the modeling results for PM-10 to approximate the concentrations of PM2.5 demonstrates that traffic emissions of PM2.5 from every Project scenario will violate the 24-hour NAAQS for PM2.5. Compliance with the annual NAAQS for PM2.5 is not discussed or demonstrated anywhere in the SDEIS.

The emissions inventory developed for the analysis and modeling of PM-10 concentrations includes an emissions inventory for PM2.5, which constitutes a fraction of total PM-10. The inventory data show that PM-10 particles less than 2.5 µm in diameter comprise 57% of total PM-10 emissions from the I-70 Project. See AQ Report, Tables 22 and 23, p.69 (showing that daily total PM-10 emissions from traffic in the I-70 in January 2035 will be 0.7 tons/day, and of that total 0.4 t/d will be PM2.5).

The air quality modeling for PM-10 estimates that the cleanest build alternative (the lowered 10-lane scenario with a single 800 feet cover, an interchange at Vasquez Blvd/Steele St and managed lanes) will add 38 µg/m3 to daily (24-hr) background concentrations of PM-10. The emission inventory data states that of this 38 µg/m3 of PM-10 added by Project emissions to ambient air concentrations, 57% will be PM2.5. Thus if the 43% of the PM-10 that is larger than 2.5 µm is removed from the calculation, the concentration that remains is particles in the PM2.5 size range. Thus the modeling demonstrates that traffic emissions from the project will add (38 x .57) 21.7 µg/m3 to daily concentrations of PM2.5 at the peak receptor locations.

Using the same methodology used in the AQ Report to estimate future 24-hour concentrations of PM-10, this 21.7 µg/m3 of PM2.5 must be added to the 98th percentile concentrations of PM2.5 measured at the monitoring station used to establish background air quality for the Project area. Background 24-hour concentrations of PM2.5 at the Commerce City monitoring
station (Birch Street and 71st St), using EPA’s methodology for calculating the 24-hour “design value.” Consistently exceed 20 µg/m3 in the project area. See Design Values for 2011, 2012, 2013 (attached hereto as Appendix A).

When the approximate 24-hour concentrations of PM2.5 added by Project emissions, as derived from the PM-10 modeling results, are added to background PM2.5 design values occurring at the Commerce City monitor, the modeling results for PM-10 demonstrate that even the cleanest Project alternative will contribute to 24-hour concentrations greater than 40 µg/m3. The 24-hour NAAQS is 35 µg/m3. The PM-10 modeling results for other Project alternatives show that PM2.5 emitted from these alternatives will add even more than 40 µg/m3 of PM2.5 to background 24-hour concentrations. Therefore, all Project alternatives will cause violations of the 24-hour NAAQS for PM2.5.

Given this evidence that the 24-hour NAAQS for PM2.5 will be violated, NEPA requires that the Draft EIS must consider Project alternatives or control strategies that will prevent or avoid these violations. See 40 CFR §§1502.1, 1502.2(d), 1502.14 and 1502.16(h). To determine whether alternatives or control strategies will be adequate to prevent NAAQS violations, the impact of Project emissions on PM2.5 concentrations must include a quantitative assessment of the expected magnitude of violations of both the 24-hour and annual NAAQS, and a quantitative demonstration that alternatives or control strategies will achieve sufficient reductions in emissions to ensure attainment at all receptor locations included in the modeling analysis.

PM-10 Attainment. The modeling results for PM-10 show that traffic emissions from five of the six “build” Project alternatives will violate the 24-hour NAAQS for PM-10. See AQ Report, Table 20, p.65. These violations are expected to exceed the PM-10 NAAQS (150 µg/m3) by 20 to 45 µg/m3. Only one “build” alternative (the lowered 10-lane scenario with a single 800 feet cover, an interchange at Vasquez Blvd/Steele St and managed lanes referred to as the “Basic Option”) and the No-build alternative are modeled as exactly attaining the NAAQS.

Despite the requirement of 40 CFR §1502.14(e) that the Draft EIS identify a “preferred alternative,” no alternatives are identified as preferred. Each alternative is treated as an available option for CDOT and FHWA to select. Therefore the Draft EIS must identify Project alternatives or control strategies that will prevent or avoid these modeled NAAQS violations for each of the available options. See 40 CFR §§1502.1, 1502.2(d), 1502.14 and 1502.16(h).

In addition, the modeling result for the one lowered, managed lane option that allegedly does not violate the NAAQS is not credible. The emissions for the alternative that demonstrates attainment (the “Basic Option”) is modeled to add only 38 µg/m3 to ambient concentrations of PM-10, whereas emissions from the other lowered, managed lane option (with two covers and no interchange at Vasquez Blvd/Steele St referred to as the “Modified Option”) is expected to add 82 µg/m3 to background concentrations of PM-10, thereby causing concentrations at peak receptors to reach 195 µg/m3, violating the NAAQS by 45 µg/m3. See AQ Report, Table 20. Yet the expected winter day emissions of PM-10 from the two alternatives are virtually identical: 0.68 t/day. See AQ Report, Table 23 (p. 69). The discussion of PM emissions in the AQ Report, at p.68, explains that –

13 40 CFR Part 50, Appendix N.
Although there are minor differences in emissions among the No-Action and Build Alternatives, there is no real discernible difference, since they are all very close in any given year. Therefore, the particulate matter emissions are not a discriminating factor in the selection of a preferred alternative.

It is not plausible that virtually identical emissions from the two lowered, managed lane alternatives could produce daily ambient concentrations of PM-10 that differ by 45 µg/m3.

The traffic data for these two alternatives also does not explain the large (55%) difference in peak daily ambient concentrations of PM-10 added by the two alternatives (38 µg/m3 versus 82 µg/m3). The Basic Option has higher expected traffic (annual VMT = 2,959,000) on I-70, compared to expected traffic on the Modified Option (annual VMT = 2,935,000). Total VMT in the Project study area differs between the two alternatives by less than 0.35%: Basic Option = 25,036,000 versus Modified Option = 25,125,000. See I-70 East Environmental Impact Statement, Traffic Technical Report, Figures 86 and 88, pp. 95-96.

Given that the contribution added to ambient concentrations by the Modified Option (82 µg/m3) is much closer to the concentrations added by other alternatives without managed lanes, and without covers over segments of the lowered portion of the Project, the much lower contribution added by the Basic Option (38 µg/m3) is the implausible outlier. In the absence of any correlation between the significantly lower ambient concentrations for the Basic Option and key factors that could account for 55% lower concentrations, such as either lower total Project emissions or significantly lower traffic counts, the claim that the Basic Option will not contribute to violations of the NAAQS for PM-10 is not credible.

Information that would help better understand the modeling results is not provided in the AQ Technical report. Missing information includes data files showing inputs to the MOVES emission model and to the dispersion model runs.

**Construction Emissions.**

Neither the Draft EIS, nor the AQ Technical Report include any discussion of the likely impact that construction emissions will have on air quality or adverse health outcomes in the communities affected by emissions from heavy equipment during construction operations.

Emissions during construction will be a much greater concern for this project than most highway projects because of the years of excavation and earth moving that will be required to dig the trench and haul the removed earth to a disposal site 20 or more miles away. For most projects, construction activities are limited to grading, laying a road bed and paving. Here, the years of excavation required will likely increase construction emissions by an order of magnitude compared to most projects.

Despite the potential significance of these emissions for community health, the SDEIS lacks any discussion of the mitigation measures available to CDOT to require contractors to use low sulfur fuels, employ low-emitting equipment that can minimize the impact of diesel fumes on local residents, and other mitigation measures identified in EPA's 2008 comment letter.

EPA has now added non-road emissions factors to the MOVES model for use in modeling the impact of activities such as construction on ambient air quality. This tool should be applied to the expected construction operations during the excavation of the I-70 trench in addition to more
traditional highway construction activities to estimate the likely impact on air quality near the construction zone.

In addition the alternatives and mitigation options discussed by EPA in 2009 should be committed to minimize public exposure during construction. Additional measures should be committed if emissions will potentially contribute to exceedances of short-term NAAQS.

II. Mitigation to be Considered by DRCOG to Reduce Pollutant Exposures in the I-70 Corridor.

Commenters request that DRCOG consider two operational measures as mitigation to reduce pollutant exposures in the neighborhoods adjacent to I-70.

1) re-signing I-70 to route the 40% of traffic that is "through" traffic out of the neighborhoods where dense urban development and elementary schools are located within a few hundred meters of I-70 onto I-76 and I-270; and

2) routing all truck traffic off of the current alignment between Washington Street and Colorado Blvd which would require through truck traffic to use I-76 and I-270, and local truck traffic to disperse on local streets leading to their local destination rather than concentrating on the current alignment next to schools and houses along the highway.

These alternatives are reasonable because they will add mobility for traffic traveling through the metro area, without significantly increasing the cost of mobility, while at the same time providing health benefits for communities along the current I-70 alignment. These alternatives have not been evaluated in prior NEPA documents.

Consideration of these alternatives should include traffic modeling and air quality modeling to answer the following questions for decisionmakers and the public:

a) how much reduction in traffic emissions within the I-70 Project study area could be achieved by diverting truck traffic away from the segment of I-70 where NAAQS violations are expected by requiring that trucks use I-76 and I-270?

b) would the reductions in PM emissions achieved by a truck diversion rule be sufficient to ensure attainment of every applicable NAAQS for mobile source-related pollutants (PM-10, PM2.5, NO2 and CO)?

c) would the diversion of trucks from I-70 and onto I-76/I-270 increase emissions enough in those corridors to cause NAAQS violations?

(d) if the diversion of truck traffic would not be sufficient to ensure that attainment of any NAAQS will not be maintained in the Project study area, would the diversion of through traffic from the current I-70 alignment onto I-76 and I-270 be sufficient to ensure attainment during the life of the Project?

(e) how much of the traffic expected to use the current I-70 alignment in 2035 would be through traffic (i.e., not expected to exit or enter between the Mousetrap and Colorado Blvd)?

(f) if through traffic were diverted onto I-76 and I-270, would emissions from those highways cause any NAAQS to be violated along those alignments?
(g) if any NAAQS violations are predicted at receptor locations along those highways, are any of those receptors in a location which EPA defines as “ambient air,” 40 CFR § 50.1, i.e. a location outside the right-of-way owned by CDOT where the general public has access?

Without answers to these questions, informed decisions about these alternatives cannot be made.

CDOT Director Hunt has stated during public meetings that CDOT cannot limit truck or car access to segments of the interstate system, and that therefore the alternatives proposed here for evaluation are not permissible. This is an incorrect understanding of the law. CDOT may not have authority to limit vehicle access under statutes that it has authority to implement, but the State clearly has authority under the CAA to limit vehicle access if necessary to attain or maintain a NAAQS for mobile source-related pollutants, and DRCOG has authority to adopt operational measures designed to improve system performance.

Under the Clean Air Act the State may adopt measures pursuant to an indirect source review program to prevent a highway from attracting mobile sources, the emissions from which will cause or contribute to violations of a mobile source-related NAAQS. 42 U.S.C. § 7410(a)(5). When necessary to attain a mobile source-related NAAQS in a nonattainment area, or maintain a NAAQS in an attainment area, the State may also adopt directly into its SIP any of the transportation control measures authorized by CAA section 108(f)(1), including “(vii) programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use.” But rather than turning these decisions over to air quality planning agencies which may not choose the best operational strategy, we urge DRCOG to use its authority to adopt operational measures that will also mitigate the adverse health impacts of highway pollution.

III. Legal Authority for DRCOG to Consider Mitigation Relevant to Adding a Regionally Significant Project to the Regional Plan is Provided by Federal Aid Highway Act.

Legal authority to assess impacts and adopt mitigation is provided by the regional planning section of the Federal Aid Highway Act and a section that requires consideration of mitigation for the impacts of federally funded highway projects. 23 U.S.C. section 109(h) and 134(i).

A. Section 109(h).

Section 109(h) of the Federal Aid Highway Act requires that highway projects be reviewed for their adverse environmental, social and economic impacts, and that mitigation strategies be identified to “eliminate or minimize” such “adverse” impacts. 23 USC § 109(h). The FHWA regulation implementing this section requires that an EIS prepared under NEPA also address the social and economic impacts required to be considered under § 109(h). 23 CFR §771.105. In addition, the metropolitan planning rule issued to implement ISTEA requires that MPOs address the criteria required by § 109(h) in the transportation plan. 23 CFR §450.316(a)(13)(1993). The current planning rule does not retain this requirement, but if the state DOT does not address the requirements of § 109(h) in an EIS prior to action by an MPO to adopt a regionally significant project into a regional plan, then the MPO must satisfy the requirements of this section before adding the project to the regional plan.
(i). Scope of Impacts to be Included in Discussion of Mitigation to Satisfy § 109(h)

The actions taken by a MPO as part of the planning process are necessary steps in the federal funding of a project. A project may not be added to a TIP for federal funding unless it comes from a conforming regional plan. To the extent that section 134(i)(2)(D) requires that an MPO consider mitigation, then that consideration must also be sufficient to satisfy § 109(h).

Section 109(h) requires that all "adverse" "environmental, social and economic" impacts are subject to the statutory requirement to identify reasonable mitigation measures. The consideration of mitigation measures required by §§ 134(i)(2)(D) and 135(f)(4)(A) and (B) must be equally broad because FHWA/FTA may not approve the projects in a State TIP as eligible for federal funding until the determination required by section 109(h) has been made that the project is in the best overall public interest.

The requirements of NEPA, enacted January 1, 1970, were supplemented for highway projects by 23 USC § 109(h), enacted December 30, 1970. Section 109(h) of the Federal-Aid Highway Act requires a three-step evaluation of impacts and mitigation measures to ensure that “final decisions on the project are made in the best overall public interest.” 23 U.S.C. § 109(h) (2004). The first step is to determine the “possible adverse economic, social and environmental effects relating to any proposed project.” Id. The second step is to determine “the costs of eliminating or minimizing such adverse effects ....” Id. The third step is to consider “the costs of eliminating or minimizing such adverse effects” together with “the need for fast, safe and efficient transportation” to make a final decision on the project “in the best overall public interest.” Id. FHWA’s implementing regulation further requires that any measures necessary to mitigate these adverse effects be incorporated into the project. 23 C.F.R. § 771.105(d).

b. Mitigation needs to be considered to Satisfy §§ 134(i)(2)(D).

Section 134(i)(2)(D) requires that an MPO include in its RTP discussion of mitigation:

(D) Mitigation activities.—
   (i) In general.—A long-range transportation plan shall include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan.
   (ii) Consultation.—The discussion shall be developed in consultation with Federal, State, and tribal wildlife, land management, and regulatory agencies.

For all of the reasons discussed above, the RTP should include discussion of mitigation measures designed to address the adverse health effects of air pollution from the I-70 project.

Respectfully submitted,

Robert E. Yuhnke
Becky English
Impacts on Home Values and City Revenues From Changes on I-70

The Colorado Department of Transportation currently is planning to widen I-70 to five lanes in each direction from Brighton Boulevard to Tower Road. In addition, it plans to depress the highway and install surface level frontage roads to accommodate local traffic between Brighton Boulevard and Dahlia Street. These changes will cost the City of Denver and Denver Public Schools property tax revenue from approximately 51 homes and 17 businesses that will be demolished to widen the highway. It will deprive the City of the jobs, sales tax and occupational privilege tax revenue generated by those businesses. In addition, estimates from 15 residential real estate brokers show that the highway decision will have significant impacts on property values and City revenues across the entire northern half of Denver.

The Survey

Approximately 15 residential real estate brokers provided their estimates of likely changes in home values for Denver County neighborhoods adjacent to I-70 between Harlan Boulevard and Colorado Boulevard. The survey area included properties between 41st and 52nd Avenues. The broker’s responses were based on either I-70 being widened to five lanes in each direction in its current location, or rerouted onto the current I-76/I-270 corridor and replaced by an at-grade boulevard carrying significant traffic similar to Martin Luther King Boulevard.

On average, the brokers who responded to the survey have sold 370 homes during their professional careers. Each currently is actively selling in the northern half of Denver. They represent 11 real estate companies which in 2012 comprised more than half of the ten highest producing offices in the 80211 and 80212 zip codes.

---

1 That includes the Berkeley, Chaffee Park, Elyria, Globeville, Grandview, Harness Heights, Inspiration Point, Sunnyside and Swansea neighborhoods.
2 Not all brokers felt comfortable commenting on all of the neighborhoods based on their specific expertise.
3 The author of the survey is Steve Kinney, a residential real estate broker with RE/MAX Professionals. Steve has been a broker for more than 10 years and has completed more than 300 transactions, with approximately two-thirds of those in older central Denver neighborhoods, and more than 30 of those within one mile of I-70. He can be reached at Steve@SKinneyProperty.com or 303-475-8200.
Findings

Highway Widening:

According to the brokers, widening I-70 will result in an average expected loss of home value of 7.64% in the Elyria and Swansea neighborhoods within a block of I-70. The average loss in all of Elyria, Swansea and Globeville is expected to be 6.85%. That translates to a loss in homeowners’ net worth of more than $55 million and a loss in annual tax revenue of $105,000 just from these three small neighborhoods.

Highway Reroute:

Denver County is poised to receive ownership of a gigantic amount of developable land if a re-route of I-70 were to occur. These parcels will not only translate into revenue from sales of these parcels, but also ongoing property tax revenues.

Property values for homes between Lowell and Tennyson, and within two blocks on each side of I-70, provide a clear picture of the results of a lack of connectivity on the value of properties “cut-off” from others. Despite the fact that homes on the north side of I-70 between 48th and 50th Avenues are architecturally more attractive, on-average larger, and have less sound and exhaust pollution⁴, in 2013 they sold for only 83% of the selling price of homes within two blocks south of the highway.⁵

On average, the brokers expected an increase in property values of more than $150 million for northern Denver County residential properties if I-70 is removed from the City. That is an average increase in net worth of $17,200 spread across 9,160 homeowners within seven blocks of the existing highway. That would produce an annual increase in property tax revenues of almost $1 million. In addition, it is expected that following a reroute there would be considerable renovation and improvement to existing

⁴ This is the result of prevailing wind patterns.
⁵ Rerouting the highway also would reintegrate Regis University into the northwest Denver community further increasing property values, and would have a positive effect on the value of Adams County properties between 52nd Avenue and Clear Creek.
homes within the survey area, leading to further increases in homes values and property taxes.\(^6\)

All but one of the brokers surveyed agreed that homes as far as seven blocks from I-70 would be moderately more valuable if the highway was rerouted.\(^7\) The average expected increases in value ranged from a low of 2% in Harkness Heights, located four to seven blocks south of I-70, to a staggering 30% in Globeville. Indeed, the combined average increase for Elyria, Swansea and Globeville, the neighborhoods most heavily impacted by the highway, are 24.6%.

The brokers were almost unanimous in the opinion that removing the highway would be a catalyst for the revitalization of Globeville, Elyria and Swansea communities that have wonderful architecture and incredibly proximity to the City center, but which are the only communities within three miles of downtown that have to-date not experienced significant residential property value appreciation. Also, neighborhoods outside the scope of this survey would in all likelihood be positively impacted by the removal of the highway.\(^8\)

Conclusions

Widening I-70 between Brighton Boulevard and Tower Road will cost the City of Denver numerous jobs. It will cost both the City and the Denver School District considerable revenue. It will lower property values in the Globeville, Elyria and Swansea neighborhoods, and further isolate these communities\(^6\) while providing little or no benefits to the City or its residents. Removing I-70 from Denver, rerouting it along the I-76/I-270 corridor and replacing the highway with a surface level boulevard similar to Martin

\(^6\) The additional revenue from commercial properties and from new residential development that would be spawned by highway removal was not studied, but one projection at the University of Colorado at Denver estimated $1.5 billion in direct and indirect economic benefits to Denver from removing I-70.

\(^7\) The projected increases in values took into account the expectation that significant amounts of traffic would remain on any surface level boulevard that would replace the highway.

\(^8\) These would include Cole, Clayton, Five Points, Park Hill, Mountain View and parts of Stapleton and Wheat Ridge.

\(^9\) Isolation will result from the facts that widening the highway will triple the north-south separation to over 300 ft., decrease the number of north-south cross streets from fourteen to six and require 8 to 14 foot sound barrier walls in residential areas.
Luther King Boulevard will increase property values across the entire northern half of Denver by an estimated $158 million. It will re-integrate the City, especially the neighborhoods of Globeville, Elyria and Swansea. It will provide substantial property tax revenue to the City and our schools. It will instigate economic development across the current I-70 corridor that will provide additional revenues and community benefits. For all of these reasons the reroute option deserves a complete vetting through a Supplemental Environmental Impact Statement conducted by the Colorado Department of Transportation.
<p>| Location of NW Denver Homes | Approx. # of residences | Approx. Avg. Price of Homes Sold (W/Out Undersale) | Total Average Value of Homes in Area | Realtor Survey Expected Change w/70 Re-Route Option | Approx. Avg. Change in Value Per Home w/70 Re-Route Option | Approx. Avg. Total Increase in Value for this Sub-Area w/70 Re-Route Option | Approx. Change in Tax Revenue w/70 Re-Route Option | Approach Avg. Change in Tax Revenue Per Home w/70 Re-Route Option | Approach Survey Expected Change w/70 Re-Route Option | Approach Avg. Total Decrease in Value for this Sub-Area w/70 Re-Route Option | Approach Change in Tax Revenue Per Home w/70 Re-Route Option | Approx. % Increase/Decrease in Tax Revenue of this Sub-Area w/70 Re-Route Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Between 41st and 44th, west of Federal | 1091 | $365,640 | $398,913,240 | 2.92% | $7,380 | $8,063,372 | $42 | $45,850 | -3.27% | $11,966 | $23,055,342 | -568 | $574,435 |
| Between 44th and 46th, west of Federal | 1141 | $339,404 | $387,259,964 | 3.58% | $12,140 | $13,851,999 | $68 | $78,956 | -5.33% | $18,102 | $20,653,865 | -570 | $511,723 |
| Between 46th and I-70, west of Federal | 259 | $279,408 | $72,386,674 | 8.08% | $22,588 | $5,849,639 | $328 | $33,343 | -7.13% | $59,908 | $5,355,225 | -513 | $29,390 |
| Between I-70 and 50th, west of Federal | 717 | $231,642 | $166,087,314 | 10.36% | $24,007 | $17,212,681 | $533 | $98,112 | -6.44% | $14,928 | $30,703,405 | -585 | $563,009 |
| Between 50th and 52nd, west of Federal | 370 | $233,278 | $86,312,860 | 6.83% | $15,942 | $5,898,045 | $59 | $33,639 | -6.75% | $15,840 | $5,398,558 | -583 | $503,748 |
| Between 44th and 46th, east of Federal | 733 | $242,700 | $177,899,109 | 5.32% | $12,207 | $5,460,998 | $74 | $53,928 | -4.38% | $10,638 | $57,783,088 | -568 | $54,964 |
| Between I-70 and 50th, east of Federal | 549 | $238,646 | $131,016,654 | 9.42% | $22,472 | $12,337,402 | $128 | $70,323 | -6.35% | $14,313 | $57,860,999 | -584 | $544,808 |
| Between I-70 and 50th, east of Federal | 551 | $189,350 | $123,266,830 | 10.20% | $19,314 | $13,573,219 | $110 | $72,667 | -6.00% | $13,361 | $57,396,021 | -565 | $542,157 |
| Between 50th and 52nd, east of Federal | 706 | $390,953 | $134,812,818 | 8.66% | $16,627 | $13,593,907 | $94 | $66,085 | -1.64% | $3,183 | $2,246,880 | -518 | $512,807 |
| Inspiration Point neighborhood between I-70 and 49th | 201 | $252,500 | $50,752,500 | 9.63% | $24,303 | $8,884,928 | $139 | $37,846 | -6.55% | $51,168 | $5,335,366 | -592 | $519,010 |</p>
<table>
<thead>
<tr>
<th>Inspiration Point neighborhood</th>
<th>249</th>
<th>$243,994</th>
<th>$660,754,500</th>
<th>3%</th>
<th>$2,448</th>
<th>$607,545</th>
<th>$54</th>
<th>$5,463</th>
<th>-3.40%</th>
<th>$5,736</th>
<th>$5,086,853</th>
<th>-547</th>
<th>$531,779</th>
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<tbody>
<tr>
<td>#1 (light)</td>
<td>603</td>
<td>$101,490 $98,479 $619,196,470 $42,469,730</td>
<td>20.44%</td>
<td>$20,131 $12,139,751 $115 $76,992</td>
<td>$5,25%</td>
<td>$8,328</td>
<td>$3,212,920</td>
<td>$30 $58,334</td>
<td>$212,920</td>
<td>$3,212,920</td>
<td>$30 $58,334</td>
<td>$212,920</td>
<td></td>
</tr>
<tr>
<td>#2 (yellow)</td>
<td>386</td>
<td>$77,250 $58,000 $20,663,580 $3,000</td>
<td>33.00%</td>
<td>$17,980 $5,142,280 $102 $50,184</td>
<td>-7,14%</td>
<td>-5,161</td>
<td>-1,475,964</td>
<td>-29 $58,433</td>
<td>-1,475,964</td>
<td>-5,161</td>
<td>-1,475,964</td>
<td>-29 $58,433</td>
<td></td>
</tr>
<tr>
<td>#5 (green)</td>
<td>80</td>
<td>$113,000 $113,000 $8,040,980 $2,43%</td>
<td>20.43%</td>
<td>$23,084 $1,846,743 $132 $50,526</td>
<td>-6,33%</td>
<td>-7,157</td>
<td>-557,533</td>
<td>-43 $3,263</td>
<td>-557,533</td>
<td>-7,157</td>
<td>-557,533</td>
<td>-43 $3,263</td>
<td></td>
</tr>
</tbody>
</table>

<p>| Total Increase in Value of Homes in all areas | $157,679,693 | Total Increase in Tax Revenue | $327,442 | Total Decrease in Value of Homes in all areas | $104,154,377 | Total Loss in Tax Revenue | $593,680 |</p>
<table>
<thead>
<tr>
<th>Location of NW Denver Homes</th>
<th>Estimated Average Percentage Change in Value if Re-Routed</th>
<th>Estimated Percentage Change in Value if Widened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 41st and 44th, west of Federal</td>
<td>2.02%</td>
<td>-3.27%</td>
</tr>
<tr>
<td>Between 44th and 46th, west of Federal</td>
<td>3.58%</td>
<td>-5.33%</td>
</tr>
<tr>
<td>Between 46th and I-70, west of Federal</td>
<td>8.08%</td>
<td>-7.13%</td>
</tr>
<tr>
<td>Between I-70 and 50th/Regis Blvd, west of Federal</td>
<td>10.36%</td>
<td>-6.44%</td>
</tr>
<tr>
<td>Between 50th and 52nd, west of Lowell</td>
<td>6.83%</td>
<td>-6.25%</td>
</tr>
<tr>
<td>Between 44th and 46th, east of Federal</td>
<td>5.32%</td>
<td>-4.38%</td>
</tr>
<tr>
<td>Between 46th and I-70, east of Federal</td>
<td>9.42%</td>
<td>-6.63%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location of NW Denver Homes</th>
<th>Estimated Average Percentage Change in Value if Re-Routed</th>
<th>Estimated Percentage Change in Value if Widened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between I-70 and 50th, east of Federal</td>
<td>10.20%</td>
<td>-6.00%</td>
</tr>
<tr>
<td>Between 50th and 52nd, east of Federal</td>
<td>8.60%</td>
<td>-1.67%</td>
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<tr>
<td>Inspiration Point neighborhood between I-70 and 49th</td>
<td>9.63%</td>
<td>-6.57%</td>
</tr>
<tr>
<td>Location of NE Denver Homes</td>
<td>Estimated Average Percentage Change in Value if Re-Routed</td>
<td>Estimated Percentage Change in Value if Widened</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>#1 [blue] Globeville, a block or more from the freeway</td>
<td>20.44%</td>
<td>-5.25%</td>
</tr>
<tr>
<td>#2 [yellow] Globeville, within a block of the freeway</td>
<td>31.00%</td>
<td>-7.14%</td>
</tr>
<tr>
<td>#3 [pink] Elyria and Swansea, not within a block of I-70/46th Ave</td>
<td>20.33%</td>
<td>-7.43%</td>
</tr>
<tr>
<td>#4 [orange] Elyria and Swansea, within one block of I-70/46th Ave</td>
<td>30.75%</td>
<td>-8.17%</td>
</tr>
<tr>
<td>#5 [green] SE Swansea</td>
<td>20.43%</td>
<td>-6.33%</td>
</tr>
</tbody>
</table>
Chair Jackie Millet, Executive Director Jennifer Schaufele, and Transportation Planning and Operations Director Douglas Rex:

Thank you for the opportunity to comment on the I-70 East project. Included or attached are the documents, commentary and/or links I made reference to in my comments last night during the Public Comments portion of the DRCOG meeting.

*****

1. American Planning Association / Transportation Planning Division Committee

I-70 East Reconstruction – Denver, Colorado
Transportation Planning Division
Peer Review & White Paper
October 15, 2014

The American Planning Association is the nation’s leading association of planning professionals.

This 15 page document - which I can only politely characterize as a SCATHING CRITIQUE - describes a peer review of the CDOT I-70 East project - including a site visit along the I-70 corridor, met with representatives of the Colorado Department of Transportation (“CDOT”), the Denver Regional Council of Governments (“DRCOG”), the City and County of Denver, including the Office of the City Auditor and members of the City Council, representatives of the Colorado Chapter of the American Planning Association and members of the community at large.

*****

2. Comments made by John O. Norquist, long-time Milwaukee Mayor, and former President and CEO - now Emeritus - of the prestigious Congress for New Urbanism - at the North Metro Denver Citizens Transportation Summit, April 25, 2014 - held at Denver's
Oxford Hotel, wherein Mayor Norquist - near the end of his 20 minute presentation regarding transformations made by removal of urban freeways - concludes his remarks - describing the current CDOT I-70 East Partially Covered Lowered Option as "BREATHTAKINGLY STUPID"

YouTube Video Link: https://www.youtube.com/watch?v=Cg9rcbkNKsU

I would urge to to take the time to view all of the segments of this incredibly informative and thoughtful 4 hour Summit Meeting. https://www.youtube.com/channel/UCtFaCycMLzPuzLHi3OAAsRSA

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3. Colorado League of Women Voters - pdf presentation entitled TRENCH WARFARE - An Overview of the I-70 Viaduct Debate - which includes cost comparisons of 3 projects - and which appears to reflect a GROSSLY OVERESTIMATED COST of the I-270 / I-76 Re-Route

The comparisons include:

T-REX (I-25)- Completed - Rebuild 17 miles with 209 NEW lane miles - $795 Million
Parsons Corp. I70 Mountain Proposal - Rebuild 53 miles, approx. 550 lane miles PLUS new Tunnels - $3.5 Billion
CDOT (I-270 / I-76) Re-Route Cost Estimate - Rebuild 12.8 miles with 204.8 lane miles - $4.35 Billion

To an informed observer, it would appear that the sole objective of the CDOT estimate is to so grossly overestimate the re-route alternate as to justify its elimination from consideration.

****

4. League of Women Voters - Full and Accurate Assessment of the I-70 Project
Letter to the Editors of metro Denver newspapers and media outlets.

In its letter, the LWV STRONGLY RECOMMENDS that CDOT include the I-270 / I-76 Re-Route option as part of its SDEIS process. It calls on CDOT to provide more information and transparency in the process for this important civic project.

The League has long been frustrated by CDOT resistance / refusal to provide thorough and comprehensive information associated with the summary rejection of the I-270 / I-76 re-route option.
****

Once again, thank you for the opportunity to provide information and comment on this project.

Marty Amble
3131 S Jasmine Way
Denver. CO 80222
I. Introduction

Representatives of the American Planning Association's Transportation Planning Division ("TPD team") were invited to Denver, CO to conduct a peer review of the I-70 East Reconstruction project ("I-70 East"). The peer review occurred September 22-23, 2014. During that time, the TPD team conducted a site visit along the I-70 corridor, met with representatives of the Colorado Department of Transportation ("CDOT"), the Denver Regional Council of Governments ("DRCOG"), the City and County of Denver, including the Office of the City Auditor and members of the City Council, representatives of the Colorado Chapter of the American Planning Association and members of the community at large. The TPD team wishes to thank and acknowledge their hard work and passionate commitment to Denver's well-being.

APA, as the nation's leading association of planning professionals, strives to understand the interrelatedness and long term consequences of decisions, balancing socioeconomic, infrastructure and environmental considerations that play into major civic initiatives. APA's Transportation Planning Division likewise exists to facilitate technical information sharing among member professionals who deal with ways transportation effectively and efficiently moves people and goods, shapes urban form, affects economic vitality and impacts quality of life. The Division promotes professional communication among its own members, with other APA divisions and with other professional groups. We assess policies, programs and projects, so as to derive the full public benefits of comprehensive and community-based planning that promote personal mobility and travel choices.

The I-70 East project is one of the most significant public infrastructure investments planned for metropolitan Denver and all of APA's policy considerations are vitally important to project success. It should be noted as well that, as a peer review panel, the TPD team offers its insights and guidance for
the benefit of all stakeholders involved in the local-decision making process. We are not submitting this report to CDOT as a formal comment on the Draft Environmental Impact Statement for the I-70 East Project. Instead we are offering our insights to the City and County of Denver for your consideration as you move forward with next steps in relation to this project. We do not offer recommendations, but rather considerations that advance project planning in a meaningful way. Likewise, our findings will be shared with transportation professionals across the nation, many of whom are involved with similar projects as so many similar-era highway viaducts reach the end of their useful life. We would also like to emphasize that we were invited to offer an outside perspective on this project. We do not presume to portray that after two days of meetings with numerous groups and after reviewing written documents, we know as much about this project as the many people we met with, nor do we know what is “right” for the community, but do offer a fresh pair of eyes at a key point in the planning process. And we do believe that it is critical for CDOT, DRCOG and Denver to “get it right.”

II. Planning Themes & Policy Guidance

Interstate 70 runs east-west from Maryland to Utah and serves local, regional and national transportation functions. As with many such facilities across the country, sections of I-70 were built within a settled urban environment. These areas are often characterized by intense urban redevelopment, a history of highway-related takings and urban mixed use development patterns. The Denver section in the Globeville, Elyria and Swansea neighborhoods exhibits many of these qualities and is therefore a focus of this peer review.

According to CDOT, the purpose of this project is to “replace the bridge between Brighton Boulevard and Colorado Boulevard, because it is 50 years old and nearing the end of its useful life. Also, our goal is to resolve congestion, make the interstate safer, and make it easier to get on and off the highway.”
(Source: “I-70 East Project Snapshot,” September 2014, p. 4.)

Currently, I-70 is a six-lane freeway on a viaduct. The CDOT would prefer to construct a 10-lane freeway section in a trench meeting full AASHTO design criteria (i.e., 12-foot lanes, 12-foot shoulders, etc). The new 10-lane freeway will be comprised of six mainline lanes and four managed lanes. CDOT also
proposes to modify and maintain the interchange at Vasquez Boulevard, which is located approximately ½-mile west of the Colorado Boulevard interchange.

At this point in the process, CDOT has released its supplemental draft environment impact statement (DEIS) for public comment. The preferred alternative of CDOT and the Federal Highway Administration (FHWA) is known as the Partial Covered Lowered Alternative. While this document will not restate the design features and project scope, it is important to note that I-70 East is being undertaken pursuant to MAP-21, which includes new and progressive approaches to transportation system management. MAP-21 places a renewed emphasis on system preservation/improvement, economic growth, safety and innovative approaches to project financing. CDOT reflects many of these qualities in its purpose and need statement for the I-70 East project. The observations and considerations below are provided to inform and further align project elements with national and state project objectives.

The federal project development and EIS process is very time consuming and that makes it difficult to hold a plan, let alone a constituency for the plan, together over a decade of analysis, revision and supplemental information. This is not unique to I-70 East, hence Congressional intent in MAP-21 to streamline the project development and construction process. That is difficult to do while maintaining a transparent and meaningful dialogue, but there are some good models, including Florida’s Efficient Transportation Decision Making (ETDM) process (http://www.dot.state.fl.us/emo/ETDM.shtm), which includes environmental and socio-cultural effects screening of projects as part of the MPO Long Range Transportation Plan. The TPD team can make available other resources as the project moves forward.

III. Observations

This section covers the eight key observations of the TPD team. Each of the observations includes some insight from the peer review and research, together with paths forward for consideration by CDOT and other stakeholders. As a prevailing theme, it is noted that CDOT is proposing to spend $1.2 billion on this project. This is a significant public investment in infrastructure that will benefit the entire state of Colorado, the City and County of Denver and the above-mentioned neighborhoods. However, it is the adjoining neighborhoods that will bear significant impacts from this project. CDOT, DRCOG, the City and County of Denver all offered thoughts on neighborhood revitalization, but likewise recognized that
resources must be brought to the table in order to correct historic injustices, modernize facilities and restore the integrity and stability of these neighborhoods.

Understandably, the traveling public will not be interested in the finer details as to which public agency has responsibility for planning, designing, constructing and operating public roads; rather they want an integrated system and expect the various jurisdictions to cooperate in all phases of the decision-making process. These observations, therefore, are intended to guide public agencies through the complexities of the project to distill a progressive “way forward”.

#1 - Transportation System Planning:

As a general note, the TPD team observed that there was not a common understanding among transportation agencies, other public agencies, and neighborhood groups regarding the transportation system as a whole and the specific role of I-70 within that system. To the point made earlier about the lengthy planning stage for this project, there appears to be a lack of a system planning approach that could have been updated together with the supplemental DEIS. The influence of I-70 in the Denver metro region is significant, and its long-term role relative to the parallel and connecting roadway network, existing and emerging transit network, and non-auto transportation modes needs to be examined in a comprehensive, integrated manner. In addition, the transportation network must be evaluated in relation to existing land uses, and how those uses are expected to evolve over the next 30-50 years. The importance of coordinated transportation system and land use planning manifests itself in myriad ways that could help to resolve conflicts and broker compromise solutions that achieve positive outcomes for all parties.

Likewise, there appears to be a legitimate question about whether the recommended design alternative is fully consistent with the DRCOG’s Regional Transportation Plan. That reflects some ambiguity on the part of the Transportation Plan, or lack of attention on the part of CDOT to affirm consistency by requesting amendment of the Transportation Plan as project concepts evolved. Re-connecting these efforts going forward is both required and informative for the system as a whole.
Further, a system planning approach should result in broad agreement over the range of multimodal strategies necessary to address future travel demand while minimizing adverse impacts on existing communities, public health, the environment and fiscal efficiency. There appears to be little accomplished in the I-70 corridor planning process to develop and support a carefully thought-out multimodal strategy.

It is unclear if there is a regional freight/goods movement plan with sufficient detail to guide route planning and operational strategies, which are critical in the I-70 corridor. This should be closely linked to evolving land use patterns guiding the location of industrial, warehouse/distribution and intermodal facilities. Signage, wayfinding and operational parameters should all be part of the consideration. We offer an example from the Florida Department of Transportation (http://tampabayfreight.com/) that strategically addresses regional freight mobility and accessibility within context-sensitive solutions that reflect economic development, changing land uses and community redevelopment efforts.

There appear to be no vehicle miles traveled ("VMT") targets set for the corridor that would account for anticipated growth/change in development over time and the application of complementary strategies designed to reduce VMT. It was difficult to determine if VMT and other system planning measures (travel time, vehicle hours of delay, person hours of delay, etc.) comparisons were made for initial and refined alternatives. This is important in part because there is extensive research that indicates that VMT is strongly correlated with the production of CO2 in the atmosphere, which in turn is leading to climate change at a global scale (see for example, TPD peer review panelist, Reid Ewing et al, Growing Cooler: The Evidence on Urban Development and Climate Change).

The role of arterial and local streets, and non-auto networks, in the corridor remains relatively vague in the context of CDOT’s preferred alternative for I-70 East. There is indeed a lack of connectivity in the I-70 corridor section, and while the plan attempts to resolve those issues, there appears to be little agreement on role and function of using the non-interstate network part of the corridor to address connectivity and mitigate travel demand, thus enabling a narrower interstate footprint.

Transit is virtually missing from the conversation in part because transit investments are not directly tied to the I-70 East project proposal. This is unfortunate because the Denver community is truly embracing transit. If there were agreed-upon system-wide and corridor-level VMT and mode share goals, then transit and the role of Transportation Demand Management programs, park-and-ride, shuttle circulators,
and parking management strategies in major activity centers served by I-70 and I-25 would be a bigger part of the corridor plan.

A stronger focus on how the corridor functions as part of the system, with roles and responsibilities defined, will make it easier for CDOT, local government, partner agencies and local neighborhoods to agree upon strategies for the corridor that balance competing interests and achieve key shared objectives.

#2 - Travel Demand Modeling:

DRCOG is responsible for maintaining the regional travel demand model used as a basis for analysis of travel demand in the I-70 corridor, development, screening and evaluation of alternatives. Yet, there appears to be a general lack of confidence that the model provided reasonably accurate forecasts, with CDOT and others citing it as "using what we have available" or "what was provided to us."

During our on-site interviews, the panel was told that CDOT, and its lead consultant on the I-70 project, Atkins North American, established the need for a 10-lane cross section on I-70 using the DRCOG old travel demand model and the DRCOG old future land use forecast for 2035. We were told they did not test a full range of highway project alternatives. CDOT referred us to DRCOG, and DRCOG referred us to CDOT. A follow-up conference call with key personnel at CDOT and Atkins confirmed what we were told previously. Submitting to an interview was an exceptionally collegial gesture on the part of CDOT, as they are in the comment period for the Supplemental EIS and ordinarily would not provide additional information. While CDOT specifically asked that any conclusions we reach as a panel be submitted as formal comments, the TPD team will not do so directly. However, interested stakeholders may draw from the questions we presented to DRCOG:

- Was an 8-lane cross section (3 general purpose lanes and one managed lane in each direction) ever tested using the DRCOG travel demand model? Was an alternative that did not involve frontage roads on both sides ever tested? With the 10-lane section and frontage roads, the preferred alternative cross section is wider than a football field is long. It would maximize rather than minimize impact on the abutting Environmental Justice neighborhoods. Our on-site
interviews suggested that an 8-lane cross section was screened out initially and not actually run as a network alternative using the model. This was confirmed in the conference call. It would be important to determine if an 8-lane section would have sufficient capacity in the horizon year before moving to a 10-lane section, given the severe impacts on neighborhoods along the alignment. The fact that the project runs through minority neighborhoods makes it all the more important that the cross section adopted have the absolute minimum width that would meet the purpose and need requirements of the project. Given the desire to minimize impacts on minority neighborhoods, the panel recommends that an 8-lane section, with and without frontage roads, be tested by CDOT and Atkins as lower impact alternatives to a 10-lane widening with frontage roads. Was the 10-lane section tested using DRCOG’s new Focus travel demand model? From our conference call, the answer is no. Focus, which became operational in 2010, is an activity-based model that generates trip tours (linked trips such as stopping on the way home from work to do shopping) rather than individual trips. It is state-of-the-art. It accounts for peak spreading, the tendency of travelers to change their time of departure when faced with congestion. Instead, the old travel demand modeling software, Compass, was used by Atkins. Compass is a trip-based model that treats trips as though they are independent of one another rather than linked into tours; it does not account for peak spreading. Atkins is not one of the consulting firms that has worked with Focus. This was confirmed in our conference call. The rationale for the decision to use Compass rather than Focus was the instability of tour generation with Focus, whereas trip generation with Compass is stable from model iteration to iteration. It was also suggested during the conference call that FTA and FHWA have a problem with Focus because tour generation may differ across alternatives in an alternatives analysis, creating an “apples and oranges” comparison. We don’t find these rationales compelling and recommend that Focus be used to test the 8- and 10-lane sectional alternatives. (DynusT, the traffic simulation program used by Atkins/CDOT, does account for peak spreading. It is unclear to the panel whether this fully corrects for the failure of Compass to account for peak spreading in the initial phase of travel modeling.)

- Was traffic induced by the 10-lane section accounted for by CDOT and Atkins? The answer is no. It is now widely accepted that major highway projects like the proposed I-70 widening create new travel demands both in the short run, by generating additional trips, and in the long run, by
altering development patterns. The old Compass model, used in this case, accounts for rerouted trips but not newly generated trips because (in this four-step model) trip generation is assumed to be a simple function of socioeconomics and not affected by roadway levels of service. The new Focus model does account for newly generated trips, but was not used by Atkins (see above). Again, the panel recommends that Focus be used to test the 8- and 10-lane sectional alternatives, with and without frontage roads.

- Was highway induced development accounted for by CDOT and Atkins? The answer is no. DRCOG’s old spreadsheet based land use allocation model was the basis for the 2035 land use inputs used by Atkins. It does not account for the development inducing effects of a major highway project like I-70. Future land use patterns assumed as the major inputs to DRCOG’s Compass model were the same for build and no-build alternatives. This violates best modeling practices and leaves the project open to technical criticism. DRCOG’s new UrbanSim model includes much more realistic treatment of development decisions, and can account for highway induced development. It was not used by Atkins in its modeling work because it was not available until recently, but it is operational now. The panel recommends that UrbanSim be used to test the 8- and 10-lane sections.

- What are operational characteristics (LOS) for different sections of I-70 in the horizon year? Common sense suggests that there will be a serious bottleneck for westbound traffic created by having the 10-lane section of I-70 transition down to 6 lanes to the west of the project. The panel finds it hard to believe that the transition will be a smooth one and that westbound traffic will not back up terribly. An 8-lane cross section would produce a smoother transition to the 6-lane section, and that consideration is among the reasons why it should be tested.

The TPD team emphasizes that the size and scale of a transportation facility is fundamentally based on the forecast demand model. Understanding the assumptions and findings is critical to making an informed decision on the number of lanes, regular and/or managed. The basic problem, as the panel sees it, is that planning for I-70 improvements began more than 10 years ago, and the practice of modeling by CDOT and Atkins has not kept pace with best modeling practices. The methodology memo
hammered out between CDOT and FHWA at the beginning of the process no longer serves the project partners well.

#3 - Managed Lanes:

The preferred alternative identified by CDOT and analyzed in the DEIS includes a “managed lanes” option. In the DEIS, CDOT discusses the “managed lanes” option as follows:

General-purpose lanes are traffic lanes that do not apply any restrictions to the vehicles using them. Managed lanes implement operational strategies that will be adjusted based on real-time traffic demand on the highway facility. This is accomplished by providing a specially managed travel lane for vehicles to avoid congestion and travel at a higher speed than the general-purpose lanes. The purpose is to provide a reliable, congestion-free option along the highway and provide a way to manage congestion over the long term to reduce the need for future expansion. The Build Alternatives Managed Lanes Option only manages the added capacity. Existing capacity remains as general-purpose lanes. (DEIS, p. 3-18.)

The DEIS also indicates that “the pricing and policies for the managed lanes will be determined through a separate study.” (DEIS, p. 3-19).

While it is encouraging to see that CDOT is considering a “managed lanes” option for the project, it is our observation that the use of managed lanes in this corridor could have a significant influence on the overall functionality of this corridor that is not necessarily being taken into account in the planning for this particular project. The Federal Highway Administration (FHWA) has observed that transportation agencies across the country are developing “managed lanes” systems, particularly in urban centers, and that these managed lanes systems can be designed to meet a variety of specific operational goals.

FHWA provides an overview of the managed lanes concept on its agency website http://ops.fhwa.dot.gov/publications/managelanes_primer/  FHWA defines "Managed lanes" “as highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing conditions.” Exhibit 1 is a diagram that captures the potential lane management
applications that fall into this broad definition of “managed lanes.” On the left of the diagram are the applications of a single operational strategy—pricing, vehicle eligibility, or access control:

- **Pricing** — Includes both traditional toll lanes and toll lanes that use congestion pricing, where price is varied during certain time periods in order to manage demand (e.g., peak-period surcharge or off-peak discount).
- **Vehicle eligibility** — The lanes are managed by allowing certain vehicles or restricting others; minimum occupancy is an example of an eligibility restriction.
- **Access control** — An example would be express lanes where all vehicles are allowed but access is limited during long stretches of the facility, minimizing turbulence in the flow of vehicles.

Exhibit 1: Managed Lane Applications (source: Federal Highway Administration)

As you move to the right on the diagram, you get into the more complicated managed lane facilities that blend more than one of these strategies:
- Combined pricing and eligibility — HOT lanes where higher occupancy vehicles such as buses, vanpools and carpools are given free or discounted passage and all other vehicles are tolled.
- Combined vehicle eligibility and access control — Examples include exclusive busways, transitways or truck facilities serving a specific type of vehicle, with barrier separation and limited access points
- Multifaceted managed lanes — Integrates all strategies for an actively managed facility that incorporates a high degree of operational flexibility

On its website, FHWA also provides examples of a variety of different operational goals that can be met through the proper design and operation of a managed lanes system. It should also be noted that there is a growing body of research on managed lanes systems that is available at this time, some of which is referenced on the FHWA website.

From our collective experience, we believe that a well-designed managed lane system concept for the I-70 corridor, which is integrated into a larger managed lane system plan for the Metropolitan Denver highway system, and is also connected to the regional and local transit system, would lead better future performance for the entire system, and would also allow for better-informed decisions regarding the specific lane configurations and access points for the I-70 East segment.

We also believe that it will be very important for CDOT and the other transportation agencies that are involved in this planning process to do a better job in explaining the “managed lane” concepts that are under consideration. It was our impression from the meetings we attended with community stakeholders and elected officials that many of them do not have a good understanding of “managed lanes” applications, and that there may be unnecessary fears regarding how the use of these applications would affect public access to the highway system and the cost of using the system.
#4 - Community and Economic Development:

Considerable efforts are being made to develop cohesive community and economic development plans in tandem with the I-70 East project. The recently-launched North Denver Cornerstone Collaborative together with Council activities are at the heart of this effort and it is very important to move forward ahead of a record of decision. Planning documents, adopted and approved, will provide a framework that will inform the final preferred I-70 East design alternative, articulate desired mitigation efforts and lay the foundation for implementation of land use, economic and community development efforts before, during and post-construction. The City’s commitment is well-timed and vital to building a trusting partnership with the community over the next decade.

We heard several times the need to establish (or re-establish) “connectivity” in the adjoining neighborhoods. The actual solutions ranged considerably - from new crossings over the rail tracks, to new street connections, frontage roads and so on. An immediate and iterative process to settle on a set of recommendations to improve connectivity and accessibility should be a priority and efforts to achieve consensus are well worth the effort. Since the cost of such improvements is at the heart of discussions between the City and CDOT, the record of decision (or parallel city/state memorandum of understanding) should lay out the responsibilities of each party. Once construction begins, it will be much more difficult to “go back” and revisit these decisions.

In addition, the panel understood from its conversation with CDOT staff that there will be significant investments to improve storm water drainage and these investments will also benefit the adjacent neighborhoods, which have historically had drainage problems. The TPD commends CDOT for working with the City and County of Denver and the neighborhood to solve this problem across jurisdictional boundaries. However, we did not get the impression from our meeting with community leaders that they were aware of the potential benefits to the neighborhood storm water drainage systems from this project; we believe this issue needs to be addressed more directly by CDOT and the City in their future discussions with the community leaders.

Regardless of the selected alternative, deconstruction of the actual viaduct (let alone other construction work) will be lengthy and disruptive. We do not believe, however, that the true impacts of construction
activities are commonly understood. Since a preferred alternative has not been selected and more
detailed design work will not accelerate for some time, it is important to maintain close contact as design
moves forward in order to fully understand these impacts.

During this interim period, we do believe it is important for the City as well to plan for the construction
period in part by reaching agreement regarding CDOT’s responsibilities during construction. For example,
the City may wish to further its efforts to improve the business/resident relationship. One example (of
many good ones) would be a good-neighbor compact with local businesses and trucking companies to
clamp down on “cutting through” residential streets. The same, of course, goes for CDOT’s contractors
who will likely be subject to noise and air quality monitoring, but could benefit as well from commonly-
agreed to times of construction, haul routes, etc.

Likewise, the implementation of advance projects to facilitate connectivity and alternate routes is well-
advised. That work is underway and should continue. It was unclear as to whether added capacity along
the northerly alternate route, I-270, would be implemented prior to I-70 East construction work but that
is an important early decision.

#5 - Constructability & Construction Impacts:

It is clear that whatever alternative is pursued, other than the “do-nothing” alternative, that the
neighborhoods adjacent to I-70 will be significantly impacted during construction. These impacts will
include impacts from construction activities, including: dust, noise and vibration, and other impacts
resulting from the project including: disruption of circulation on local streets, possible diversion of trucks
through the neighborhood from the adjacent industrial areas. However, these impacts will be limited in
time to the duration of the project. Other impacts will be much longer in term, including the taking of
homes and the major adjustments to the playground for the Swansea Elementary School.

#6 - Vasquez Interchange Design Consideration:

The TPD team also reviewed an option studied by the City and believes that consideration should be
given to closing the interchange at Vasquez. This would result in a significant area that could be
redeveloped for the benefit of the neighborhood to accommodate mixed income housing and neighborhood-serving retail and community or civic uses. The neighborhood is interested in a grocery store, for example. The land may also provide a good alternative for a relocated elementary school. The TPD team understands that Commerce City officials believe this interchange is necessary for truck traffic from their community; hence the importance of an integrated context-sensitive freight system plan.

#7 - Mobility During Construction:

The TPD team recognized that CDOT and the City and County of Denver and the City of Commerce City are all mindful of the significant construction-related impacts. However, it was not apparent to the TPD team that the stakeholders have resolved the “advance package” of mobility-related projects. Clearly, adding lanes to I-270 before the I-70 project begins will help alleviate construction traffic concerns. Similarly, addressing neighborhood circulation issues through multimodal accessibility and connectivity enhancements before construction of I-70 begins will minimize the disruption to local circulation during construction. The timing of projects matters and the advance work should be well into design in order to ensure project delivery prior to the start of intensive I-70 East construction.

#8 - Community Engagement Process:

During our meeting with community leaders, we heard a significant amount of criticism about the community engagement process conducted by CDOT, in collaboration with the City and County of Denver. We were told that the “open house” community meetings conducted by CDOT did not provide opportunities for the community leaders to engage in group discussions with CDOT and the City representatives to help build community consensus regarding issues of concern to them, and that there was not a clear understanding of how CDOT and the City would be taking specific comments received from the public and responding to them directly. We believe that in the future CDOT and the City of Denver staff should work collaboratively to develop a more robust community engagement process, with participation from other interested public agencies such as DRCOG, the regional transit agency, and neighboring cities, along with community and neighborhood residents, business owners and other stakeholders. While one-on-one exploration of maps and design plans with CDOT representatives is an important component of increasing understanding, such a tactic – absent community forums in which
everyone can hear questions and responses – falls short of achieving meaningful participation that is important to building community consensus.

One “success story” in this realm that should be considered is the I-15 / 40th Street Freeway Project in San Diego. In the early 1990s, the California Department of Transportation (Caltrans) was evaluating options for extending I-15 through some disadvantaged neighborhoods in the Mid-city area south of I-8. Through its planning process, Caltrans became aware of significant community concerns regarding the possible impacts of the highway project on their neighborhoods. This ultimately led to a collaborative planning and community engagement process that included the City of San Diego, Metropolitan Transit District Board, and many other stakeholder groups and community representatives. The result was that Caltrans selected a preferred alternative for this 2.2-mile corridor that was designed to minimize community impacts while at the same time improving the functionality of regional transportation system. In addition, Caltrans and the City entered into a formal Memorandum of Understanding that laid out the specific community improvements that were agreed to (including covers over the freeway at key locations), and identified the responsible parties for each of these improvements. The MOU also laid out mutual understandings regarding highway operation issues and specifically addressed future linkages of a planned regional transit line in the I-15 corridor to existing and planned transit routes serving the community, through elevators to be installed on the intersecting boulevards that would connect to center-median transit stations on I-15 (see attached article and exhibits). Caltrans received an Honorable Mention for this project in the 2002 FHWA Transportation Planning Excellence Award Program.

The APA Transportation Planning Division would be willing to provide more detailed information on this project and its community engagement process for consideration by CDOT and the City and County of Denver, and would also be willing to provide additional assistance to CDOT and the City in designing a similar community outreach and collaboration process for the I-70 East Project as it moves into its next phases of planning and project development.

IV. Organization, Roles and Responsibilities

The TPD team met with numerous stakeholders over the course of the two-day peer review exercise. It is worth noting that these meetings were illuminating from the perspective of partnership and
coordination. In part because the I-70 East project is now in a critically-important public review phase, stakeholders are both framing their positions on the preferred alternative and planning for the short- and long-term impacts of the project moving forward. At some point in the near future, a project will move forward and it is vitally important for all stakeholders to recognize and embrace their roles. Project success will not be determined solely by the actions of the CDOT as the primary sponsor. Rather Denver, DRCOG, the local neighborhoods and business communities and adjoining municipalities will all need to come to the table in meaningful ways.

The clearest early manifestation is the above-referenced North Denver Cornerstone Collaborative. It was not apparent during our short visit that the Collaborative has truly “launched” with stakeholder buy-in and engagement. This is a key first step which will lead to concrete short- and long-term steps to improve the most-impacted communities. Likewise, it is incumbent on DRCOG to embrace a more meaningful role in system-wide planning and travel demand forecasting. As planners, we are responsible for not only the regulatory aspects of plan development, but also their relevance as a decision-making tool. Finally, as the project sponsor, CDOT is understandably pushing hard to move a project forward.

There will be a point in the process – during preliminary design at the latest – when all stakeholders need to be brought back to the table in a coordinating fashion in order for all parties to stay aligned on construction staging, contractor specifications as they relate to mitigation activities, design features, communications, detours, alternatives routes, the “leave-behind” condition for local roads, surplus land and the non-access line and so on. This process would ideally lead to an I-70 East coordinating committee led jointly by the City and County together with CDOT.

V. National Applicability

As noted in the introduction to this report, many state transportation agencies, regional transportation planning agencies and local governments are now wrestling with the same difficult issues regarding replacement of aging viaducts as is CDOT and the City and County of Denver. A recent report by the Congress of New Urbanism [http://www.cnu.org/highways/freewayswithoutfutures](http://www.cnu.org/highways/freewayswithoutfutures) identifies a significant number of viaducts that are in need of replacement, and provides some additional examples regarding the options being considered for these projects. APA Transportation Planning Division will be sharing our
observations regarding the I-70 East Project, and lessons learned that could be applied to other projects involving replacement of existing viaducts, with our members and colleagues.

VI. Closing

The TPD team again wishes to thank all of the stakeholders who assisted with the peer review and took the time to meet with us, both in Denver and in follow up conversations. Our hosts were extremely gracious and welcoming during a sensitive phase of the project. We were able to have honest and thoughtful discussions which, when taken as a whole, offered a unique perspective on the project. The findings and insights contained herein reflect both a situation analysis and pathway forward. To that end, the Transportation Planning Division and members of the TPD team are available to you to assist and provide further details on any of the matters discussed herein.
Peer Review Panelists

Whit Blanton, FAICP
Vice President and Principal
Renaissance Planning Group
Orlando, FL

Thomas Dow, AICP
Transportation Manager
City of Olathe, KS

Reid Ewing, Ph.D.
Professor of City and Metropolitan Planning & Director of the Metropolitan Research Center
University of Utah
Salt Lake City, UT

Robert A. Leiter, FAICP
Urban and Environmental Planning Consultant
San Diego CA

Michael Piscitelli, AICP
Deputy Economic Development Administrator
City of New Haven, CT
TRENCH WARFARE
An Overview of the I-70 Viaduct Debate
Condition of the Viaduct

- Built in 1964 and now deemed “functionally obsolete”
- Replacement studies were started in 2003
- Coming: The Supplemental Draft Environmental Impact Statement (SDEIS), preliminary identification of the Preferred Alternative, and public hearings
Trench vs. I-270/I-76 Reroute Alternative
Partially Covered Lowered Alternative

- 1½ mile long, 30-foot deep “trench,” from Brighton Blvd to Colorado Blvd
- 350 feet wide (10 through lanes)
- Four local lanes built at the surface
- 800-foot long “cover” placed near the Swansea Elementary School
- Cost estimating history:
  - $917 million in May 2012
  - $1.785 billion in April 2013
  - $2.2 billion in June 2013
  - ? billion today

Source: Colorado DOT
CDOT’s I-270/I-76 Reroute Version

12.8 miles long
12 through lanes
16 built lanes
$4.35 Billion

Reconnecting the Neighborhoods
With the I-270/I-76 Reroute Alternative
Artist Rendering of East 46th Ave
With the I-270/I-76 Reroute Alternative

Source: City Planning Department, 10-29-2008
Community Questions Persist

• Is CDOT’s draft cost estimate of **$4.35 billion** for the Reroute alternative credible?
• Why is CDOT **double-counting** their already planned widening of I-270?
• Should the disadvantaged Globeville-Swansea-Elyria residents be wary of another big hit?
  – Will the planned trench actually **separate** the communities more?
  – Will reduced access place **more trucks** on the surface frontage roads?
  – What about snow and ice removal, debris removal, flooding?
Key Issues Regarding CDOT’s Reroute Cost Estimate

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<th>I-270/I-76 Reroute Cost Estimate</th>
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<td>4. New through lanes</td>
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<td><strong>Total Project Cost Estimate</strong></td>
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### Reroute Cost Estimates From CDOT’s 2012 Report

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<tr>
<th>I-270/I-76 Reroute Cost Estimate</th>
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<td>Subtotal roadway cost Item 7 x Item 8</td>
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<td>$980,000,000</td>
<td>$980,000,000</td>
</tr>
<tr>
<td>Additional structure cost</td>
<td>$800 M</td>
<td>$800,000,000</td>
<td>Prorated</td>
</tr>
<tr>
<td>New interchanges</td>
<td>$20 M each x 4</td>
<td>$80,000,000</td>
<td>$0</td>
</tr>
<tr>
<td>Total construction cost</td>
<td>$2,700,000,000</td>
<td>$1,420,000,000</td>
<td>$1,220,000,000</td>
</tr>
<tr>
<td>Other costs:</td>
<td></td>
<td></td>
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<tr>
<td>30% contingency</td>
<td>$680,000,000</td>
<td>Prorated</td>
<td>$370,000,000</td>
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<tr>
<td>15% design and 20% CO</td>
<td>$800,000,000</td>
<td>Prorated</td>
<td>$440,000,000</td>
</tr>
<tr>
<td>I-70 removal</td>
<td>$47,000,000</td>
<td>Prorated</td>
<td>$26,000,000</td>
</tr>
<tr>
<td>Right-of-way</td>
<td>$8.2 M per mile</td>
<td>$100,000,000</td>
<td>$8.2 M per mile</td>
</tr>
<tr>
<td><strong>Total Project Cost Estimate</strong></td>
<td><strong>$4,350,000,000</strong></td>
<td><strong>$2,350,000,000</strong></td>
<td><strong>$2,000,000,000</strong></td>
</tr>
</tbody>
</table>

Source: CDOT I-270/I-76 Reroute/Bypass Alternative Draft Cost Estimate, July 9, 2012. Prorations (last three columns) were calculated by an independent expert.
A “Reasonableness” Check on CDOT’s Reroute Cost Estimate

I-25 from Logan St to I-225: 12 lanes x 6.5 miles = 78 lane-miles
I-25 from I-225 to C-470: 14 lanes x 6.5 miles = +91 lane-miles
I-225 from I-25 to Parker Rd: 10 lanes x 4.0 miles = +40 lane-miles
Total Lane-miles Constructed = 209 lane-miles

T-REX
17 miles long

I-270/I76 Reroute Cost Estimate
12.8 miles long x 16 lanes = 204.8 lane-miles

<table>
<thead>
<tr>
<th>Total Highway Cost</th>
<th>$795 million</th>
<th>$4.35 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Highway Cost per Lane Mile</td>
<td>$3.80 million/Im</td>
<td>$21.2 million/Im</td>
</tr>
</tbody>
</table>

Source: Southeast Corridor Constructors and CDOT.
## Repair of CDOT’s Reroute Cost Estimate

<table>
<thead>
<tr>
<th></th>
<th>Trench Cost</th>
<th>Widen I-270</th>
<th>Widen I-76 To 12 Lanes (16 built lanes)</th>
<th>Net Cost Assigned to Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trench Alternative</strong></td>
<td></td>
<td>6 Thru Lanes Per CDOT Plan (10 built lanes)</td>
<td>Added Cost For 6 More Thru Lanes (16 built lanes)</td>
<td>$2.2 Billion</td>
</tr>
<tr>
<td><strong>CDOT I-270 Project</strong></td>
<td>$2.2 Billion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reroute Alternative</strong></td>
<td>From CDOT's 2012 Draft Estimate (21.2M/LM)</td>
<td>$950 Million</td>
<td>$1.1 Billion</td>
<td>$2.35 Billion</td>
</tr>
</tbody>
</table>

Source: Colorado DOT
## Repair of CDOT’s Reroute Cost Estimate

### Repair #1

<table>
<thead>
<tr>
<th>Trench Cost</th>
<th>Widen I-270</th>
<th>Widen I-76</th>
<th>Net Cost Assigned to Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trench Alternative</td>
<td>$2.2 Billion</td>
<td>Added Cost for 6 More Thru Lanes (16 built lanes)</td>
<td>$2.2 Billion</td>
</tr>
<tr>
<td>CDOT I-270 Project</td>
<td>$950 Million</td>
<td>To 12 Lanes (16 built lanes)</td>
<td>$950 Million</td>
</tr>
<tr>
<td>Reroute Alternative</td>
<td>From CDOT's 2012 Draft Estimate ($21.2M/LM)</td>
<td>$1.1 Billion</td>
<td>$2.35 Billion</td>
</tr>
</tbody>
</table>
## Repair of CDOT’s Reroute Cost Estimate

### Repair #2

<table>
<thead>
<tr>
<th>Trench Cost</th>
<th>Widen I-270</th>
<th>Widen I-76 To 12 Lanes</th>
<th>Net Cost Assigned to Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trench Alternative</strong></td>
<td></td>
<td></td>
<td><strong>$2.2 Billion</strong></td>
</tr>
<tr>
<td>$2.2 Billion</td>
<td></td>
<td></td>
<td><strong>$2.2 Billion</strong></td>
</tr>
<tr>
<td><strong>CDOT I-270 Project</strong></td>
<td><strong>$950 Million</strong></td>
<td></td>
<td><strong>$950 Million</strong></td>
</tr>
<tr>
<td><strong>Reroute Alternative</strong></td>
<td>From CDOT’s 2012 Draft Estimate ($21.2M/LM)</td>
<td><strong>$1.1 Billion</strong></td>
<td><strong>$2.35 Billion</strong></td>
</tr>
<tr>
<td>Using T-REX’s Actual Costs ($3.8M/LM)</td>
<td></td>
<td><strong>$350 Million</strong></td>
<td><strong>$425 Million</strong></td>
</tr>
</tbody>
</table>
## Repair of CDOT’s Reroute Cost Estimate

### Repair #3

<table>
<thead>
<tr>
<th></th>
<th>Trench Cost</th>
<th>Widen I-270</th>
<th>Widen I-76 To 12 Lanes (16 built lanes)</th>
<th>Net Cost Assigned to Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trench Alternative</strong></td>
<td>$2.2 Billion</td>
<td></td>
<td></td>
<td>$2.2 Billion</td>
</tr>
<tr>
<td><strong>CDOT I-270 Project</strong></td>
<td></td>
<td>$170 Million</td>
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<td>$170 Million</td>
</tr>
<tr>
<td><strong>Reroute Alternative</strong></td>
<td></td>
<td></td>
<td>$1.1 Billion</td>
<td>$2.35 Billion</td>
</tr>
<tr>
<td>From CDOT's 2012 Draft Estimate ($21.2M/LM)</td>
<td></td>
<td></td>
<td>$350 Million</td>
<td>$425 Million</td>
</tr>
<tr>
<td>Using T-REX's Actual Costs ($3.8M/LM)</td>
<td></td>
<td></td>
<td>$350 Million</td>
<td>$425 Million</td>
</tr>
</tbody>
</table>
Parsons proposes $3.5B project for I-70

- The plan calls for reconstruction all of the existing general-purpose lanes on I-70.
- The plan also would add a two or three lane reversible tollway or busway 53 miles long from C-470 and Silverthorne.
- Parsons says it will also add bores at the Eisenhower-Johnson Memorial Tunnel and at the Twin Tunnels at Idaho Springs.

# Recap of Three Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-REX</td>
<td>$795 million</td>
</tr>
<tr>
<td>Rebuild 17 miles with 209 new lane-miles</td>
<td></td>
</tr>
<tr>
<td>Parsons Corp. I-70 Mountain Proposal</td>
<td>$3.5 billion</td>
</tr>
<tr>
<td>Rebuild 53 miles, approx 550 lane miles plus new tunnels</td>
<td></td>
</tr>
<tr>
<td>CDOT Reroute Cost Estimate</td>
<td>$4.35 billion ?</td>
</tr>
<tr>
<td>Rebuild 12.8 miles with 204.8 new lane-miles</td>
<td></td>
</tr>
</tbody>
</table>
Safety, Health and Welfare Impacts

• Social justice
• Health concerns
  – Air pollution
  – Noise pollution
• Property values and economic opportunities
• Social cohesion

Bottom Line

• The Reroute Alternative will cost much less than CDOT’s Preferred Trench Alternative.
• The Reroute Alternative will have significantly fewer environmental impacts.
• Taxpayers must pressure CDOT to include the Reroute Alternative in the EIS process, providing a more credible analysis.
Key resources used in this presentation

• Websites
  – www.i-70east.com
  – www.unitenorthmetrodenver.com

• Reports

• Letters
  – American Institute of Architects Denver to CDOT – 09/12/2013
  – United Community Action Network Statement – 05/18/2013
Questions?
Dear Editor:

The League of Women Voters of Denver has strongly recommended to the CDOT I-70 East EIS Project Team that all alternatives be addressed in the final Environmental Impact Statement, including the I-270/I-76 reroute option.

We hope a full and accurate cost analysis will be provided that will reassure the public that all promising options are fairly considered. Comparative cost data, the sources of the funding and lifetime expected cash flows on all of the available options, and transparency on the part of CDOT are all a matter of great concern to League members.

We also call for continued involvement of all stakeholders, as this is crucial to arrive at a decision that best serves current and future residents of the affected areas in Denver.

The League continually advocates for an open, responsive, and accountable government system. We also call for measures that ensure sound planning for Denver and for plans that meet the physical, social, educational, recreational, cultural, governmental, aesthetic, and economic needs of Denver's people, with strong citizen participation in the decision-making process.

We call now on the people of Denver and the city’s media outlets to join us in asking for more information and transparency in the process for this important civic project. Thank you.

Pearlanne Zelarney
Director of Communications
League of Women Voters of Denver