IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

Civil Action No.: 17-1679

SIERRA CLUB,
ELYRIA AND SWANSEA NEIGHBORHOOD ASSOCIATION,
CHAFEE PARK NEIGHBORHOOD ASSOCIATION, and
COLORADO LATINO FORUM,

Petitioners,

v.

ELAINE CHAO, in her official capacity as Secretary of Transportation,
FEDERAL HIGHWAY ADMINISTRATION, and
JOHN M. CATER, in his official capacity as Division Administrator,
FEDERAL HIGHWAY ADMINISTRATION, COLORADO DIVISION,

Respondents.

PETITION FOR REVIEW OF FINAL AGENCY ACTION

INTRODUCTION

1. Petitioners seek review of the Record of Decision, I-70 East ROD 1: Phase 1 (Central 70 Project) ("ROD"), issued by the U.S. Department of Transportation, Federal Highway Administration, that approves and authorizes federal funding to expand Interstate 70 from six to ten primary travel lanes, plus an additional four auxiliary lanes, over approximately 10 miles, including through several densely populated urban

neighborhoods of north Denver, from the interchange with I-25 (known as the "Mousetrap") on the west to the interchange with Chambers Road on the east, referred to in the Final Environmental Impact Statement as the I-70 Central Project Phase 1 (the "I-70 Project" or "Project").

2. Petitioner organizations seek to protect the health of their members and members' children, who live or attend one of five schools in close proximity to the I-70 Project, from elevated threats of permanent or debilitating health impairments and pre-mature death caused by exposure to highway air pollutants.

3. According to the U.S. Environmental Protection Agency ("EPA"), the on-set and exacerbation of childhood asthma and pre-mature mortality from cardiovascular disease are each linked causally to particulate matter and nitrogen oxide exposure. Particulate matter and nitrogen oxide are highway pollutants that are regulated under the Clean Air Act by National Ambient Air Quality Standards ("NAAQS").

4. The ROD issued for the I-70 Project is unlawful because the environmental review of the air quality and public health impacts of pollutants emitted from the Project in the Environmental Impact Statements ("EIS") fails to comply with the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 *et seq*., the Federal-Aid Highway Act ("FAHA"), 23 U.S.C. § 101 *et seq*., and the Clean Air Act ("CAA"), 42 U.S.C. § 7401 *et seq.*

5. Respondents' Final Environmental Impact Statement ("Final EIS"):

a. fails to investigate or disclose to residents directly affected, decision makers, and the public, the effects on human health that will result from exposure to harmful air pollutants emitted from traffic that, according to the Final EIS, will increase 65% in the I-70 corridor, from 177,400 vehicle trips per day in 2015 to 292,000 vehicle trips per day in 2035.

b. fails to disclose and incorporate into the decision, a 2014 report from Denver's Department of Environmental Health (attached as Exhibit 1) that identifies disparate adverse health outcomes for diseases of air pollution in the neighborhoods adjacent to the proposed I-70 Project, as compared with other Denver neighborhoods:

- An approximately 50% greater rate of mortality from cardiovascular disease than in other Denver neighborhoods.
- A 40% greater rate of asthma hospitalizations for children than in other Denver neighborhoods.
- An average life span that is 3.5 years shorter, on average, than in other Denver neighborhoods, contributing to tens of thousands of years of life lost annually among the residents of these neighborhoods.

c. fails to consider, as required by NEPA, reasonable alternatives and/or mitigation that "restore and enhance" the human environment, by reducing the public's exposure to harmful air pollution in the neighborhoods adjacent to the I-70 Project.

d. fails to determine whether emissions from increased traffic on I-70 will violate the National Ambient Air Quality Standard ("NAAQS") for fine particles[1], which is the highway pollutant most responsible for increased mortality, by using EPA-approved air quality models as the best scientifically-credible method for determining the impact of Project emissions.

e. fails to acknowledge and disclose that the air quality modeling of coarse particles[2] emitted from the I-70 Project demonstrates that the Project will add 41 $\mu g/m^3$ of PM10 to ambient air concentrations in the Project area, which violates the increment for PM10 (30 $\mu g/m^3$) established under Part C of the Clean Air Act to prevent the significant deterioration of air quality in areas cleaner than the NAAQS.

f. fails to identify alternatives and/or mitigation sufficient to avoid violations of the NAAQS for PM2.5 and the increment for PM10.

g. fails to estimate the cost of mitigation needed to prevent adverse health effects and violations of air quality standards, and fails to weigh those costs in determining whether the Project is "in the best overall public interest," in violation of the FAHA, 23 U.S.C. § 109(h).

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[1] Fine particles are particulate matter smaller than 2.5 micrometers in diameter, commonly known as "soot," and regulated by an annual and a 24-hour NAAQS for PM2.5. *See* 40 C.F.R. § 50.18.

[2] Coarse particles are particulate matter smaller than 10 micrometers in diameter and regulated by a NAAQS for PM10. See 40 C.F.R. § 50.6.

h. fails to make a lawful determination under the CAA that Project emissions will not violate the NAAQS for PM10 by violating various statutory and regulatory requirements for "demonstrating and assuring the conformity of transportation … projects," including but not limited to, failing to account for future growth in emissions from sources other than the Project, by assuming without any evidence in the record that truck traffic on I-70 will increase by only 7% from 14,000 to approximately 15,000 trips per day while total traffic increases 65% from 177,400 to 292,000 trips per day between 2015 and 2035, and by taking credit for emission reductions from control measures in violation of a regulation that prohibits credit for unenforceable control measures.

6. For these reasons and the reasons more fully described below, Petitioners are aggrieved by the agency actions challenged in this proceeding within the scope of the Administrative Procedure Act, 5 U.S.C. § 702, because such actions will expose petitioners, their members and their members' families to increased concentrations of harmful air pollutants and perpetuate existing exposure to other harmful air pollutants.

PART I: PARTIES, AGENCY ACTIONS SUBJECT TO REVIEW, JURISDICTION AND VENUE, AND STANDING

A. PARTIES

Petitioners:

7. Petitioners are the Sierra Club, Elyria and Swansea Neighborhood Association, Chafee Park Neighborhood Association, and Colorado Latino Forum, on behalf of their boards of directors, members and staff, including their family members, who reside,

work, recreate or attend school within the zone adjacent to I-70 (collectively "Petitioners"), where air pollution exposure will be exacerbated by emissions of harmful pollutants from the I-70 Project's expanded interstate highway.

a. The **Sierra Club** is a nonprofit corporation with more than 750,000 members nationwide organized under California law. The Sierra Club's mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote the responsible use of the Earth's resources and ecosystems; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

b. The **Elyria and Swansea Neighborhood Association** is a Registered Neighborhood Organization recognized by the City of Denver, with prescribed and registered boundaries (North: County Line; South: 40th Avenue; East: Colorado Boulevard; and West: Platte River). These two neighborhoods are densely populated, low-income Hispanic neighborhoods, where the I-70 Project will demolish the most homes. Remaining residents will be exposed to harmful concentrations of dangerous air pollutants from the expanded highway. The Project will further bisect and divide the remaining portions of the two neighborhoods because it will lower the widened highway from its current elevated viaduct into a 40-feet deep and 197-feet wide trench that will cut off most surface streets that provide vehicular and pedestrian access among neighborhood residents.

c. The **Chafee Park Neighborhood Organization** is a Registered Neighborhood Organization recognized by the City of Denver, with prescribed and registered boundaries (North: 52nd Street; South: I-70; East: Inca Street; West: Federal Boulevard). The Chafee Park Neighborhood is north of and adjacent to I-70, just west of I-70's (east-west) intersection with I-25 (north-south). The Chaffee Park Neighborhood will suffer increased pollutant concentrations from increased traffic on this segment of I-70 following expansion of the Project.

d. The **Colorado Latino Forum** is a grassroots organization focused on Latino issues that supports Latino individuals and communities throughout Colorado. The vast majority of residents in each neighborhood, where residents will be most adversely affected by exposure to air pollution from the I-70 Project, are Latino.

Respondents:

8. Respondents are Elaine Lan Chao, Secretary of the U.S. Department of Transportation ("US DOT"), which includes the Federal Highway Administration ("FHWA"), and John M. Cater, Division Administrator of the FHWA's Colorado Division.

a. **Secretary Chao** is the federal official with legal responsibility for supervising the FHWA's highway planning and funding activities, preparing and approving the I-70 Project's EIS in compliance with NEPA, making the Project's "best overall public interest determination" in compliance with the Federal-Aid Highway Act, and making the Project's conformity determination in compliance with the Clean Air Act.

b. **Division Administrator Cater** is the federal official who, acting on behalf of the Secretary of Transportation, signed the I-70 Project's ROD, signed the Project's Final EIS, made the Project's "best overall public interest determination" (ROD, § 1.4), and made the Project's Clean Air Act conformity determination (ROD, § 6.1.2).

B. AGENCY ACTIONS SUBJECT TO REVIEW

9. Petitioners seek review of the ROD for the I-70 Project, including certain legally required statements and determinations contained or incorporated therein. *See* "Notice of Final Federal Agency Actions on Proposed Highways in Colorado," 82 Fed. Reg. 10,430 (February 10, 2017). The ROD can be found at: https://www.gpo.gov/fdsys/search/pagedetails.action?granuleId=2017-02660&packageId=FR-2017-02-10&acCode=FR&collectionCode=FR

10. Specifically, Petitioners seek review of legally-required actions and determinations that the FHWA must satisfy **before** it may issue a ROD and execute an agreement that approves a project's design and specifications and obligates federal funds for the project pursuant to 23 U.S.C. § 106. For the I-70 Project, these actions and determinations include, but are not limited to:

a. the failure to issue a Final EIS that complies with NEPA, 42 U.S.C. §§ 4321 *et seq*., and its implementing regulations promulgated by the Council on Environmental Quality ("CEQ") 40 C.F.R. Parts 1500-1508, that prescribe procedures governing the preparation of a valid Final EIS; the failure to make a lawful determination that the Project is "in the best overall public interest," as required by the FAHA, 23 U.S.C.

§ 109(h), because the agency failed to consider all relevant statutory factors, failed to explain how it applied those factors to determine the Project is "in the best overall public interest," failed to consider all evidence relevant to the statutorily-required factors that the agency must weigh when making the public interest determination, and failed to comply with the Secretary of Transportation's implementing procedures, 23 C.F.R. Part 771, including but not limited to, adopting required mitigation to avoid or minimize the Project's adverse impacts; and

b. the failure to make a transportation project conformity determination required by section 176(c) of the CAA, 42 U.S.C. § 7506(c), that complies with the statutory test that requires that the project "will not cause or contribute to any new violation" of the national ambient air quality standard for PM10, and that complies with the applicable regulations, 40 C.F.R. Part 93, prescribing the criteria and procedures for "demonstrating and assuring conformity" promulgated pursuant to 42 U.S.C. § 7506(c)(4)(B).

C. JURISDICTION AND VENUE

11. This Court has original jurisdiction to review final agency action by the Secretary of Transportation, acting through FHWA, to issue a ROD, make a "best overall public interest" determination under the Federal-Aid Highway Act, make a conformity determination under the Clean Air Act, and approve a highway project, pursuant to 28 U.S.C. § 1331 (Federal Question), 5 U.S.C. § 702 (Administrative Procedure Act), 42 U.S.C. § 4321 (NEPA), and 28 U.S.C. § 1361 (Mandamus).

12. This Court has authority to issue the requested relief (vacatur and remand) pursuant to 5 U.S.C. § 706 (Administrative Procedure Act), and 28 U.S.C. §§ 2202 (Injunctive relief) and 2201 (Declaratory relief).

13. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(e). The agency actions and omissions for which review is sought were taken largely within the District of Colorado, regarding a highway project that is located in Denver and adversely affects the interests of Petitioners, who reside in Denver. In addition, the FHWA Colorado Division offices are located in Lakewood, Colorado, and Petitioner Sierra Club maintains offices in Denver and elsewhere in Colorado.

14. Petitioners have exhausted any administrative remedies and satisfied all conditions precedent required by law before filing this action.

15. The final agency action that is the subject of this case was published on February 10, 2017. "Notice of Final Federal Agency Actions on Proposed Highways in Colorado," 82 Fed. Reg. 10,430 (February 10, 2017). This Petition is timely filed pursuant to 23 U.S.C. § 139(l), and on or before July 10, 2017, as required by the Notice of Final Federal Agency Action.

D. STANDING

16. Petitioner organizations have standing on behalf of their members who will be harmed by exposure to harmful pollutants emitted from the I-70 Project that will exacerbate existing health conditions, cause or contribute to the on-set of new adverse health conditions, and create the significant risk of fatal health outcomes.

17. Petitioners' members have standing to seek review of FHWA's ROD because the authorized agency action "inva[des] a legally protected interest" and causes injury that "is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical." *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560 (1992)(internal quotes omitted).

18. Petitioners' members:

a. will suffer injury from exposure to dangerous levels of certain pollutants that will be greater than if the Project were not built, and from exposure to dangerous levels of other pollutants that could be significantly reduced if requested alternatives or mitigation had been adopted;

b. such injuries are directly traceable to FHWA's ROD approving the Project and its failure to consider and/or adopt mitigation; and

c. the injuries from air pollution will be less if FHWA's ROD is vacated.

19. Petitioners have a legally protected interest under the CAA and NEPA in assuring that the NAAQS for PM10 and PM2.5, and the increment for PM10 to prevent significant deterioration of air quality are not exceeded in the neighborhoods where they and their families live and their children attend school.

20. Petitioners' legally protected interests in the attainment of standards established to protect air quality have been invaded by FHWA's failure to:

a. comply with applicable regulatory requirements promulgated under the CAA for the purpose of "demonstrating and assuring the conformity of [the I-70 Project]" with the NAAQS for PM10;

b. acknowledge for the purpose of considering alternatives under NEPA, and evaluating mitigation measures under NEPA and FAHA, that the air quality modeling analysis performed for PM10 demonstrates that Project emissions will violate the increment for PM10 established to prevent the significant deterioration of air quality; and

c. perform any scientifically credible analysis to determine if Project emissions will violate the NAAQS for PM2.5, the expected magnitude of violation, alternatives that might avoid this violation, and mitigation necessary to prevent such violation.

21. Petitioners also are harmed and aggrieved by the unlawful denial of certain procedural rights established under NEPA, FAHA and CAA:

a. Under NEPA, Petitioners have been denied full and fair consideration of alternatives that will restore and enhance the human environment in north Denver neighborhoods, by reducing pollutant exposures and the severity of the health burden imposed on residents living near I-70 and children attending school in proximity to I-70. Alternatives that can remove pollutants from the airshed adjacent to the existing I-70, include, but are not limited to, re-routing through traffic onto I-76 and I-270 or re-routing truck traffic. *See* 42 U.S.C. § 4321 *et seq*.

b. Under NEPA and FAHA, Petitioners have been denied full and fair consideration of project alternatives and mitigation measures to prevent violations of the NAAQS for PM10 and PM2.5, and the increment for PM10 established to prevent significant deterioration of air quality, and consideration of mitigation in the form of buyouts for residents exposed to elevated health risks that would allow them to move away from the high health hazard zone adjacent to I-70 and relocate in safer neighborhoods. *See id.,* and 23 U.S.C. § 101 *et seq.*

c. Under the CAA, Petitioners have been denied an opportunity for meaningful participation in the Project's conformity determination:

i. Petitioners were denied access to data, technical analyses and other relevant information relied upon by FHWA, in violation of 40 C.F.R. § 93.105(e), which requires "reasonable public access to technical and policy information considered by the agency at the beginning of the public comment period and prior to taking formal action on a conformity determination";

ii. Petitioners were given incomprehensible computer files and unexplained data files in response to their specific requests for data;

iii. Petitioners were denied a reasonable opportunity to review and comment on data after it was released;

iv. Petitioners were denied a full explanation of critical factors used by FHWA in making the Conformity Determination, as required by EPA's Hot Guidance, § 3.10;

v.Petitioners were denied an explanation in response to significant issues raised in comments.

See 42 U.S.C. § 7401 *et seq.*

22. The I-70 Project will expose Petitioners' members and their families to numerous harmful pollutants emitted from the operation of on-road vehicles and off-road construction equipment. As reported in the emission inventories in the Final EIS, these pollutants include, but are not limited to: particulate matter (PM2.5 and PM10), nitrogen oxides, carbon monoxide, sulfur dioxide, volatile organic compounds, benzene, formaldehyde, naphthalene, 1,3 butadiene, acrolein, polycyclic organic matter and diesel PM with organic gases. Final EIS, Vol. II, Attach. J, Air Quality Technical Report, §§ 2.1 & 2.2.

23. The administrative record contains a computerized atmospheric dispersion modeling analysis of the impact that Project emissions will have on ambient air quality for two of these pollutants: PM10 and carbon monoxide. Final EIS, Vol. I, § 5.10.5.

24. Air quality modeling performed for the Final EIS and the CAA Conformity Determination demonstrates that the I-70 Project will increase neighborhood exposure to PM10 over the life of the Project.

a. Using the EPA-required atmospheric dispersion model for predicting PM concentrations that will result from highway project emissions, the analysis prepared for the Final EIS estimates that the year of highest emissions will be 2035, and that by 2035,

emissions from the preferred alternative will add 57 μg/m^3 of PM10 to recent background air quality. Final EIS, Vol. II, Attach. J, Air Quality Technical Report, Table 20, at 78.

b. Using the same EPA-required atmospheric dispersion model for predicting PM concentrations from highway project emissions, the CAA Conformity Determination estimates that the year of highest emissions will be 2040, and that by 2040, emissions from the preferred alternative will add 41.1 μg/m^3 of PM10 to recent background air quality. ROD, Attach. C-7, Air Quality Conformity Technical Report, Table 2, at 10.

25. The air quality modeling analysis also demonstrates that I-70 Project emissions will cause or contribute to 24-hour concentrations of PM10 that exceed the level of the NAAQS (150 μg/m3. 40 C.F.R. § 50.6(9):

a. The modeled estimate of Project emissions in 2040 (41.1 μg/m^3) is for the sixth highest emissions day. *See id.*.

b. To demonstrate conformity, the FHWA states it followed EPA's 2015 amended Guidance for performing quantitative Hot-spot analyses (for references to, and explanation of EPA's Hot-spot Guidance, *see* Part IV CAA Claims, *infra*; ROD, Attach. C-7, Air Quality Conformity Technical Report, § 7, at 10.

c. Pursuant to EPA's amended 2015 Hot-spot Guidance, FHWA combined the sixth highest day of modeled Project contribution to PM10 concentrations with the third highest background pollution day (113 μg/m^3) to determine that Project emissions

will cause PM10 in the ambient air to reach 154.1 μg/m^3, which is 0.8 μg/m^3 less than the maximum level allowed by the NAAQS.[3]

d. This approach means that I-70 Project emissions will cause concentrations higher than 41.1 μg/m^3 on five days.

e. On two days during the relevant three-year period, background air quality levels measured at the Commerce City PM10 monitor[4] were 144 μg/m^3 and 117 μg/m^3. *See* background air quality data reported in email "Subject: Potential Error Found in Background Concentration Used in 2035 PM10 Hot-spot Conformity Analysis: I-70 East Project FINAL EIS," from Russ, Timothy (EPA, Region 8) to Henderson – CDOT, Vanessa, and Chris Horn (U.S. DOT), June 20, 2016, published in ROD, Attach. B at 11-12.

f. Any of the five highest emission days, when combined with any of the three highest background days, will produce 24-hour concentrations greater than the level of the NAAQS, and the sixth highest emission day will cause concentrations to reach 185 μg/m^3 and 158 μg/m^3 when combined with the 1st and 2nd highest background days.

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[3] To determine attainment of the PM10 NAAQS, EPA rounds any concentration up to 154.9 μg/m3 down to 150 μg/m3, which is the level of the NAAQS. 40 C.F.R. Part 50, Appendix K.

[4] The FHWA used this monitor, which is located just north of Denver, to determine background air quality.

26. The expected 24-hour PM concentrations identified in the previous paragraph are in the range (155 to 254 μg/m3) that EPA has found "unhealthy for sensitive groups" and declared a health warning for 24-hour concentrations in this range:

> Increasing likelihood of respiratory symptoms in sensitive groups including older adults, children, and people of lower socioeconomic status; aggravation of heart or lung disease and premature mortality in people with heart or lung disease.

See "Technical Assistance Document for the Reporting of Daily Air Quality – the Air Quality Index (AQI)," (EPA, May 2016), "Table 4. Pollutant-Specific Sub-indices and Health Effects Statements for Guidance on the Air Quality Index" (Attached as Exhibit 2).

27. EPA, as the federal agency with expertise in evaluating the health risks of air pollution, warns that on high pollution days, the 24-hour concentrations of PM10 resulting from I-70 Project emissions will increase the risk of asthma attacks, heart attacks and/or premature death for residents or students with heart or lung disease attending schools within the high pollution zone adjacent to the Project. *Id.*

28. The Final EIS also reports that 57% of PM10 emissions are PM2.5. PM10 includes all particles smaller than 10 micrometers in diameter, including particles regulated as PM2.5. The reported emissions inventories demonstrate that 57% of PM emitted from the Project will contribute to concentrations of PM2.5 in the ambient air. *See* Final EIS, Attach. J, Air Quality Technical Report, Table 22 - PM2.5 Emissions Inventory and Table 23 - PM10 Emissions Inventory, at 84.

29. In its review of the health effects literature available through 2009, EPA identified a "causal relationship" between exposure to PM2.5 and each of the following adverse health outcomes:

• 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.

See Integrated Science Assessment for Particulate Matter (US EPA, December 2009), at 2-10, 2-11, 2-12 ("ISA for PM") (bold in original) (excerpts attached as Exhibit 3).

30. EPA also cited studies that establish a causal relationship between exposure to one or more components of traffic PM emissions and pre-mature mortality and emergency treatment for cardiovascular outcomes, such as mortality and emergency room visits:

- "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 ["elemental carbon" which is the unburned

carbon particles remaining from incomplete combustion of gasoline and diesel fuels] and cardiovascular hospital admissions and cardiovascular mortality";

- "studies found an association between mortality and the PM2.5 sources: …, **traffic**";
- "recent studies have suggested that PM (both PM2.5 and PM10-2.5) from ... **road dust** sources or PM tracers linked to these sources are associated with cardiovascular effects."

ISA for PM, "2.4.4. PM Sources and Constituents Linked to Health Effects," at 2-26 (emphasis added).

31. EPA also 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." *ISA for PM*, at 2-26.

32. As explained in the Sierra Club comments on the Final EIS (March 2, 2016), and on the proposed Conformity Determination for PM10 (January 14, 2017), the I-70 Project's PM2.5 emissions will likely violate the 24-hour NAAQS for PM2.5 because a large portion of Project PM10 emissions are PM2.5. ROD, Attach. E, at 98-127, 405.

33. The Final EIS also reports that emissions of carbon monoxide from the Project are expected to increase year after year, beginning in 2015 and continuing through 2035. Final EIS, Attach. J, Air Quality Technical Report, ¶ 7.3.2, Table 24, at 86. Increased exposure to carbon monoxide will also increase the risk of heart attacks.

34. Petitioners' members and their families include persons who live in close proximity to I-70 and children who attend the Swansea Elementary School (located less than one city block from the western lip of the proposed partial highway cover), who are within the sensitive groups that EPA identifies as most at risk from long-term exposure to highway pollution and short-term exposure to elevated PM10 and PM2.5 concentrations that will be caused by Project emissions on high pollution days: to wit, children, older adults, people with asthma, and elderly residents with cardiovascular conditions.

35. Petitioners' members who will be exposed to increased levels of PM10 and PM2.5 that will endanger their health by exacerbating existing health conditions, contributing to the onset of new adverse health conditions, and significantly increasing their risk of pre-mature death, include, but are not limited to the following:

a. **Maria Luevano** is a member of the Sierra Club and the Elyria and Swansea Neighborhood Association. Ms. Luevano and her family live two blocks from I-70. If the Project is built, their home will be less than one block from the expanded highway. Ms. Luevano has lived at this location since she was 5 years old, except for one year, when she lived across the street. Ms. Luevano suffers from high blood pressure and shortness of breath. The symptoms of her disease are lessened when she is away from her neighborhood, including when she is at work or involved in outdoor activities. Ms. Luevano's daughter also has high blood pressure. Ms. Luevano's son attends Swansea Elementary School, where, both during and after school, he enjoys playing football and

tag on the playground located between the school building and I-70. When he uses the playground, her son coughs a lot and his eyes become red and watery, which does not occur when he plays indoors. Ms. Luevano expects that when the highway expands to within one block of her son's school, his outdoor symptoms will worsen. Ms. Leuvano's declaration, in which she addresses her concerns for her health and her family's health in more detail, is attached as Exhibit 4.

b. **Zenaida Saucedo** is a member of the Elyria and Swansea Neighborhood Association. Ms. Saucedo and her family live two blocks from I-70. If the Project is built, their home will be less than one block from the expanded highway. Ms. Saucedo has lived at this location for 30 years. Ms. Saucedo suffers from high blood pressure, difficulty breathing, and wheezy breathing. Ms. Saucedo's symptoms are lessened when she is away from her home, rather than near it. Four of Ms. Saucedo's grandchildren suffer from asthma. Two of these grandchildren live with her and the other two spend approximately 8 hours a day with her, while their parents work. Ms. Saucedo's grandchildren have suffered severe asthma attacks at her home that required hospitalization. The grandchildren have not suffered similar asthma attacks when they are not at Ms. Saucedo's home.

Ms. Saucedo expects that her health and her grandchildren's asthma conditions and symptoms will worsen if the I-70 Project expands closer to her home because their exposure to pollution will increase. Ms. Saucedo's declaration, in which she addresses her concerns for her health and her family's health in more detail, is attached as Exhibit 5.

c. **Candi CdeBaca** is a member of the Elyria and Swansea Neighborhood Association. Ms. CdeBaca lives within three blocks of I-70. If the Project is built, her home will be within two blocks of the expanded highway. Ms. CdeBaca has lived at this location for 31 years, and the home has been in her family since the 1940's. Ms. CdeBaca suffers from coughing asthma that is triggered by being outdoors in her neighborhood. She believes this is related to the emissions from I-70 because her coughing asthma went away when she lived in locations outside of Denver, and returned when she returned to her childhood neighborhood near I-70. Ms. CdeBaca believes the I-70 Project will worsen her symptoms and further limit her ability to enjoy some of her favorite activities —walking, running, biking, and otherwise enjoying her neighborhood. Ms. CdeBaca's declaration, in which she addresses her health concerns in more detail, is attached as Exhibit 6.

d. **Virginia Calderon** is a member of the Elyria and Swansea Neighborhood Association and the Sierra Club. Ms. Calderon and her family live approximately 1½ blocks from I-70. If the Project is built, their home will be within 1 block of the expanded highway. Ms. Calderon and her daughter each suffer from migraines, a condition she attributes to her proximity to I-70, because her symptoms are alleviated when she spends time away from I-70. Ms. Calderon's declaration, in which she addresses her health concerns in more detail, is attached as Exhibit 7.

e. **Guadalupe Diaz** is a member of the Elyria and Swansea Neighborhood Association. Ms. Diaz lives approximately 2½ blocks from I-70. If the Project is built,

she will live within 2 blocks of the expanded highway. Ms. Diaz suffers from a heart murmur and high blood pressure. She was also diagnosed and treated for lung cancer. Upon information and belief, Ms. Diaz's health conditions are directly related to the emissions from I-70 because her symptoms are alleviated when she spends time away from I-70. During the summer, Ms. Diaz cares for her four grandchildren for 8 hours each day. During the school year, her grandchildren are at her home before and after school. Three of her grandchildren attend Swansea Elementary School and one attends Bruce Randolph Middle School. She has noticed that their eyes are irritated and red when the three younger children stay late at school or play outside and when the elder child walks home from her middle school. Ms. Diaz's declaration, in which she discusses her concerns for her health and her grandchildren's health in more detail, is attached as Exhibit 8.

f. **Maxine Ichikawa** is a member of the Elyria and Swansea Neighborhood Association. Ms. Ichikawa lives with her son within 1½ blocks of I-70. If the Project is built, they will live within 1 block of the expanded highway. Ms. Ichikawa suffers from asthma, heart disease, and chronic obstructive pulmonary disease (COPD), which require her to use oxygen every day. Ms. Ichikawa believes her health conditions are directly related to the emissions from I-70, because on days when traffic is heavier on I-70, her breathing becomes more difficult. She also finds it easier to breathe when she leaves the area, even in the mountains. She is concerned that the increase in exposure to highway pollution caused by the I-70 expansion project will negatively impact her health,

worsening her current health issues. Ms. Ichikawa's declaration, in which she discusses her health concerns in more detail, is attached as Exhibit 9.

g. **Matthew Ichikawa**, Maxine Ichikawa's son, is also a member of the Elyria and Swansea Neighborhood Association. He lives with Ms. Ichikawa and has lived his whole life within 2 blocks of I-70. If the Project is built, they will live within 1 block of the expanded highway. Mr. Ichikawa suffers from asthma and needs to use an inhaler. He believes his condition is related to I-70, in part, because when he is at work south of Denver, he breathes and feels much better. Mr. Ichikawa expects that the increased exposure to air pollution will exacerbate his asthma. Mr. Ichikawa's declaration, in which he discusses his health concerns in more detail, is attached as Exhibit 10.

h. **Bettie Cram** is a member of the Elyria and Swansea Neighborhood Association. She lives within 2 ½ blocks of I-70. If the Project is built, her home will be located within 2 blocks of the expanded highway. When she is outside working on the plants around her home, Ms. Cram notices the smell and an increase in congestion in her chest when traffic is heavier. Because of this, she tries to avoid staying outside during rush hour or when traffic is heavier. She expects the effects to worsen when her exposure to pollution increases after the proposed expansion. Ms. Cram's declaration, in which she discusses her health concerns in more detail, is attached as Exhibit 11.

i. **Griselda Calderon** is a member of the Elyria and Swansea Neighborhood Association. Ms. Calderon lives 1½ blocks from I-70. She has lived in this home since she was four years old. Ms. Calderon suffers from shortness of breath, and other

breathing issues, including wheezing. Ms. Calderon's breathing issues subsided when she was stationed at Nellis Air Force Base near Las Vegas, Nevada. Additionally, her breathing is more difficult when she is closer to I-70 or during rush hour times. She expects that the I-70 expansion will worsen and exacerbate her symptoms and health conditions because of the increased exposure to highway pollution, which will keep her from enjoying outdoor activities with her nieces and nephews. Ms. Calderon's declaration, in which she discusses her health concerns in more detail, is attached as Exhibit 12.

j. **Alonso Cabral** is a member of the Elyria and Swansea Neighborhood Association, and lives with his family less than one block from I-70. If the Project is built, Mr. Cabral expects that his home will be the first house from the expanded highway.

Mr. Cabral's daughter suffers from asthma, and has symptoms of wheezing, coughing, and asthma attacks. She attends Swansea Elementary School, which is located adjacent to the I-70 expanded right-of-way. Mr. Cabral expects that his daughter's health condition will be exacerbated if the highway is expanded, because of the increased exposure to highway pollution she will endure both at home and at her elementary school. Mr. Cabral's declaration, in which he discusses his concern for his daughter's health in more detail, is attached as Exhibit 13.

36. Petitioner's members and their families will be injured immediately from increased exposure to harmful air pollutants. First, these pollutants will be emitted from

heavy duty construction equipment and congested traffic. Later, these pollutants will come from traffic pollution after the additional lanes are open to traffic. These injuries are causally related to each of the decisions for which Petitioners seek review: the Final EIS; the determination under the FAHA that the Project is "in the best overall public interest"; the CAA Conformity Determination; and the issuance of the ROD approving the Project.

37. Petitioners' injuries will be redressed by vacatur and remand of the ROD.

PART II: NEPA CLAIMS

INTRODUCTION

38. The National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 *et seq*., declares that:

> [I]t is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may— …
>
> (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings; … and
>
> (6) enhance the quality of renewable resources.

42 U.S.C. § 4331(b).

39. Regulations promulgated by the Council on Environmental Quality ("CEQ"), 40 C.F.R. Parts 1500-1508, implement NEPA by establishing procedures that govern federal agency decision making. CEQ's rules "provide regulations applicable to and binding on all Federal agencies…." 40 C.F.R. § 1500.3.

40. The CEQ rules are designed to:

> insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.

Id., at § 1500.1(b).

41. The NEPA process is:

> is intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore and enhance the environment.

Id., at § 1500.1(c).

42. NEPA's implementing regulations direct that:

> Federal agencies shall to the fullest extent possible: …
>
> (e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.
>
> (f) Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

Id., at § 1500.2.

43. For activities that have a significant impact on the human environment, the NEPA process establishes a minimum of four steps that agencies must include in an environmental impact statement ("EIS") to provide decision makers, affected citizens and other public officials the information needed to make informed decisions about the

environmental consequences of a proposed action. The FINAL EIS for the I-70 Project fails to satisfy each of these steps:

a. Step One: Identify and disclose environmental impacts:

> [The EIS] shall provide full and fair discussion of significant environmental impacts….

Id., at § 1502.1;

b. Step Two: Consider alternatives that would enhance environmental quality and not limit consideration of alternatives that worsen existing impacts:

> [The EIS] shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.

Id.

c. Step Three: Compare alternatives based on their respective beneficial and adverse environmental impacts:

> [The EIS] should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.

Id., at § 1502.14.

> The discussion [in the Environmental Consequences Section of the EIS] will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented…. It shall include discussion of (a) direct effects… (b) indirect effects…. (d) the environmental effects of alternatives including the proposed action….

Id., at § 1502.16.

d. Step Four: Identify, consider and compare mitigation needed for each alternative:

> Include appropriate mitigation measures not already included in the proposed action or alternatives.

Id., at § 1502.14(f).

> It shall include discussions of: (h) Means to mitigate adverse environmental impacts (if not fully covered under § 1502.14(f).

Id., at § 1502.16(h).

Mitigation includes, in relevant part:

> (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
> (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
> (c) Rectifying the impact by repairing, rehabilitating or restoring the affected environment.

Id., at § 1508.20.

44. The Final EIS for the I-70 Project violates NEPA and its implementing CEQ regulations because the public health consequences of residents' exposure to air pollution from the expanded highway and likely violations of established air pollution limits were not investigated or discussed in a scientifically rigorous manner necessary to inform decision makers and the public that Project pollution will cause adverse impacts on public health and air quality.

First NEPA Claim:
FAILURE TO PROVIDE A FULL AND FAIR DISCUSSION OF COMMUNITY HEALTH IMPACTS

45. The Final EIS fails to investigate and disclose the impact that baseline highway emissions have had and continue to have on community health in the Project study area.

46. "The degree to which the proposed action affects public health and safety" is relevant to determining whether air pollutants emitted from I-70 "significantly" affect the human environment. 40 C.F.R. § 1508.27(b)(2).

47. Evidence in the record demonstrates that baseline emissions of air pollutants emitted from I-70 are contributing to adverse health outcomes for residents and children who reside or attend schools in the neighborhoods that the Project will affect.

48. Evidence developed by the Denver Department of Environmental Health in a Health Impact Assessment ("HIA"), published in 2014 in its report "How Neighborhood Planning Affects Health in Globeville and Elyria Swansea" (September 2014), demonstrates that residents in the neighborhoods adjacent to I-70 experience disproportionately greater incidences of the diseases that EPA has found are causally linked to exposure to highway air pollutants. *See* Exhibit 1.

49. The Denver Department of Environmental Health's HIA identifies four health metrics that demonstrate the significant disparity between community health in the four city council districts where I-70 is located, when compared with other parts of Denver: 1) mortality caused by cardiovascular disease, 2) hospitalization of children for asthma, 3) cancer, and 4) obesity.

Id., at 16-17.

50. The I-70 corridor extends from the Wheat Ridge line on the west side of Denver to the Aurora line on the east side passing through Council Districts 1, 9 (which includes the Globeville/Elyria/Swansea neighborhoods that span I-70 within the Project area, beginning at the I-25 interchange and continuing east to the Steele Street/Vasquez interchange), 8, and 11.

51. The data reported by Denver's Department of Environmental Health show that residents in the four City Council districts where I-70 is located have disproportionately higher cardiovascular mortality rates. Residents in City Council Districts 1 and 9 experience 30% greater cardiovascular mortality than in District 2 (213 deaths/100,000 residents vs. 155). In Districts 8 and 11, respectively, cardiovascular mortality is 77% higher than in District 2 (275 deaths/100,000 residents vs. 155) and 74% higher (270 deaths/100,000 residents vs. 155). On average, cardiovascular mortality in the four Council Districts along I-70 is roughly 50% greater than in other parts of the city. *Id.*, at Fig. 6. These are remarkably large differences in cardiovascular mortality, which the HIA notes is the largest single cause of death in Denver and the United States. *Id.* at 16.

52. The HIA 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 in the rest of the city. *Id.,* at Fig. 7. The HIA concludes that:

> The children and youth of Globeville and Elyria Swansea visit emergency rooms for asthma-related treatment more often than their counterparts in Denver as a whole (Figure 7). Geographically, some northern and western Denver neighborhoods have higher emergency room rates for youth asthma-related events than others, with higher than average rates observed around the I-70 corridor and the junction of I-70 and I-25 (Figure

8). These kinds of asthma health disparities have been seen before and researchers suspect they are caused by factors like differences in primary care access, disease management, and exposure to asthma triggers, including indoor and outdoor air pollution. Studies in other regions have found a link between living close to a highway and problems with asthma.

Id., at 16-17 (footnotes omitted).

53. The HIA links obesity to asthma, noting that "Respiratory diseases and illnesses such as asthma can greatly impair a child's ability to function and are an important cause of missed school days and limitations of activities, as well as a large cost burden to families and society." *Id*., at 16.

54. The HIA also reports the results of a 2003 investigation of cancer cases in Elyria Swansea that found "a higher than expected number of cancer cases for several types of cancer in this area." *Id.*, at 17.

55. In addition, the draft HIA (April 2014), at 9, identified years of potential life lost as another important metric of community health. Denver's Department of Environmental Health reported that years-of-life-lost, measured as the age at death subtracted from 75, is 3.5 years greater when averaged across the residents of the Globeville/Elyria/Swansea neighborhoods, compared to other Denver residents. This means that with life spans 3.5 years shorter, on average, in the Globeville/Elyria/ Swansea neighborhoods, the approximately 15,000 residents of these neighborhoods are losing thousands of years of life, compared to other Denver neighborhoods. (draft HIA available at: http://www.pewtrusts.org/en/~/media/assets/external-sites/health-impact-project/globevilleelyriacopublic_review_draft_hia041814.pdf)

56. Of the environmental risk factors identified in the HIA, only exposure to air pollution has been causally linked to the disparate health outcomes for cardiovascular disease, childhood asthma and cancer.

57. The HIA observes that "Vehicle exhaust is the main source of air pollution in Denver" and that:

> The [Globeville/Elyria/Swansea] 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.

Id., at 19-20.

58. EPA has found that the diseases reported by the Denver Department of Environmental Health as disproportionately occurring among residents in the communities adjacent to I-70, are causally related to exposure to particulate matter emitted from traffic and highways. *See ISA for PM*, and discussion in the STANDING section, *supra*, Part I.D.

59. EPA has found that childhood asthma, one of the diseases reported by the Denver Department of Environmental Health as occurring disproportionately among residents in the communities adjacent to I-70, is causally related to exposure to nitrogen oxides, another pollutant emitted from traffic and highways.

> Epidemiologic evidence exists for positive associations of short-term ambient NO2 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."

Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (EPA, July 2008), at 5-11. (available at: https://www.epa.gov/isa/integrated-science assessment-isa-oxides-nitrogen-oxides-sulfur-and-particulate-matter) (excerpts attached as Exhibit 14).

60. EPA also identified 13 toxic air pollutants emitted from motor vehicles as contributing to cancer, asthma and cardiovascular effects. *See 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 38,706.

61. Benzene, one of the toxic air pollutants emitted from motor vehicles listed by EPA, was modeled by the Denver Department of Environmental Health in the neighborhoods of north Denver. The modeling results reported in the HIA demonstrate 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. HIA, at Fig. 11. This pattern of elevated exposure to benzene, a potent carcinogen, near highways is likely typical of other toxic air pollutants emitted from highways. These modeling results provide a local example of the exposures that contribute to adverse health outcomes in these neighborhoods.

62. FHWA acknowledged in the Final EIS that PM, nitrogen oxides, carbon monoxide, volatile organic compounds and toxic air pollutants are emitted from highways, and used EPA's emissions model to estimate future emissions for each of these pollutants. Final EIS, Vol. I, at § 5.10.1.

63. Although EPA approved use of its AERMOD dispersion model for estimating concentrations in the ambient air of each of the pollutants that FHWA identified as emitted from I-70, FHWA only used the AERMOD dispersion model to estimate future ambient concentrations of PM10 and carbon monoxide. *Id.,* at § 5.10.19.

64. When it estimated the health impacts of community exposure to pollutants emitted from I-70, FHWA did not use any scientifically validated monitoring or modeling method to estimate the baseline concentrations of these pollutants.

65. The Final EIS violates NEPA because it fails to: a) provide a full and fair discussion of the impact that baseline emissions from I-70 have on community health, in violation of 40 C.F.R. § 1502.1, and b) investigate and apply credible scientific methods available to characterize the magnitude of that impact, in violation of 40 C.F.R. §§ 1502.22 and 1502.24.

Second NEPA Claim:
FAILURE TO INVESTIGATE AND DISCLOSE HEALTH IMPACTS OF FUTURE PROJECT EMISSIONS

66. Based on traffic data provided in the Final EIS, Traffic Technical Report, if built, the proposed Project is intended to accommodate an expected 35% increase in traffic from 177,400 vehicles in 2015 to 240,000 vehicles in 2035. Final EIS, Vol. II, Attach. E.

67. Emissions of the harmful pollutants causally related to asthma, cardiovascular disease and cancer will continue throughout the life of the Project, and continue to cause or contribute to adverse health outcomes among residents of the affected neighborhoods during the life of the Project.

68. Because evidence of significant harm to health from exposure to existing baseline levels of air pollutants establishes that Project emissions will have a continuing and significant impact on health during the life of the Project, FHWA was required to estimate future impacts on community health from exposure to these pollutants if traffic in the corridor is increased by 35%.

69. The EIS violates NEPA because it fails to: a) provide a full and fair discussion of the impact that future emissions from I-70 will have on community health throughout the life of the Project, in violation of 40 C.F.R. §§ 1502.1, 1502.14 and 1502.16; and b) investigate and apply credible scientific methods available to characterize the magnitude of that impact, in violation of §§ 1502.22 and 1502.24.

Third NEPA Claim:
FAILURE TO IDENTIFY ALTERNATIVES TO RESTORE AND ENHANCE THE HUMAN ENVIRONMENT
BY REDUCING POLLUTANT EXPOSURES

70. The evidence of significantly greater harm to health in the communities adjacent to I-70 from diseases that EPA identified as causally linked to air pollution from highways, triggers a duty under NEPA for FHWA to consider alternatives to restore and enhance the human environment by removing air pollution from the afflicted

neighborhoods. There is a rational basis for this requirement because diseases linked to air pollution impose a heavy burden on the health, life spans, and physical well-being of residents and children living and attending schools near I-70, including the economic burden of health care costs not shared by the public at large or by users of the Project. *See* discussion of EPA findings in STANDING section, *supra*, Part I.D.

71. Many residents and community organizations joined Petitioners in requesting that FHWA consider the alternative of routing interstate through-traffic around the dense urban neighborhoods of north Denver onto I-76 and I-270, between the current I-70/I-76 junction in Wheat Ridge and the junction of I-270 and I-70 in east Denver, and return the existing I-70 alignment to its original use as 46th Avenue, a major urban arterial street. This alternative would reduce traffic emissions and pollutant exposures in the neighborhoods affected by I-70 emissions.

72. FHWA refused to give full and fair consideration to the I-76/I-270 alternative and failed to identify any other alternative that would restore and enhance the human environment by reducing pollutant exposures in the I-70 corridor.

73. The EIS violates NEPA and 40 C.F.R. §§ 1500.2(f), 1502.1, 1502.2(d) and 1507.2(f) (requiring agencies to "fulfill the requirements of … Executive Order No. 11514, "Protection and Enhancement of Environmental Quality") because it fails to identify and consider reasonable alternatives that can restore and enhance the human environment by reducing community exposure to harmful air pollutants and avoid the adverse health effects that will occur over the life of the Project.

Fourth NEPA Claim:
FAILURE TO COMPARE REASONABLE ALTERNATIVES WITH RESPECT TO IMPACTS ON COMMUNITY HEALTH

74. FHWA rejected the I-76/I-270 alternative based exclusively on comparing its performance as a transportation facility with the expected performance of the proposed expansion of I-70. ROD, Attach. C-1, Revised Elimination of I-270/I-76 Reroute Alternative Technical Memorandum.

75. In support of their request that FHWA compare project alternatives based on their respective impacts on human health, Petitioners submitted evidence relevant to comparing expected health outcomes between the two highway alignments, including:

a. an exposure study based on an analysis of U.S. census block data, showing that populations within the 300 meter health impact zone along the two alternative alignments between the I-70/I-76 junction in Wheat Ridge and the I-70/I-270 junction in east Denver, differ by a factor of three, with over 9,400 residents within 300 meters of I-70 and 3,400 residents within 300 meters of I-76/I-270, with a significantly higher portion of the I-70 population residing within 50 meters of the highway;

b. evidence showing that removing traffic from the current I-70 alignment would provide a significant benefit to neighborhoods adjacent to I-70 and the I-70/I-25 interchange (the "Mousetrap") that are exposed to the highest pollutant loadings in all of Colorado, including:

i. Colorado Department of Transportation traffic counts showing that 324,000 vehicles pass through the Mousetrap daily, which is 30% more traffic than any other location in the State.

ii. data from EPA's Toxics Release Inventory showing that more than half a million pounds of toxics were released into the air in zip code 80216 (Globeville, Swansea, and Elyria) in 2012, more than any other zip code in Colorado, and more than 20 percent of the state's total toxic air releases.

iii. data showing Denver County 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.

e. a published peer reviewed research study showing that when population exposures to PM2.5 are reduced over a 10 year period, the incidence of mortality from cardiovascular disease declines as well; and

f. monitoring data demonstrating that background pollution concentrations for PM are lower in the neighborhoods where I-76 and I-270 are located, thereby ensuring that cumulative pollutant exposures would be less if traffic were re-routed on the alternative alignment.

76. FHWA unlawfully concluded that it had no obligation to compare the I-70 Project expansion alternatives with the I-76/I-270 alternative based on their respective impacts on health and mortality risks to the exposed populations.

77. The Final EIS violates NEPA and 40 C.F.R. §§ 1500.2(f), 1502.1, 1502.2(d), 1502.14 and 1502.16 because it:

a. fails to compare alternatives based on their respective impacts on human health and as a result fails to inform the decision maker, the affected public and other public officials of the public health benefits that could be achieved by an alternative that might have transportation drawbacks, compared to the Preferred Alternative, for the purpose of making an informed decision about whether possible negative effects on travel times or other relevant metrics for assessing transportation system performance, if any, should be accepted as a reasonable tradeoff for protecting community health; and

b. fails to provide a meaningful public health metric to compare the public health impacts from the I-70 Project expansion with the public health impacts of any alternative considered for the purpose of restoring and enhancing the human environment for those neighborhoods suffering the adverse health effects from exposure to current highway emissions.

Fifth NEPA Claim:
FAILURE TO CONSIDER CUMULATIVE IMPACTS ON HUMAN HEALTH OF EXPOSURE TO THE FULL ARRAY OF POLLUTANTS EMITTED FROM HIGHWAYS

78. FHWA made a limited consideration of the health impacts of exposure to Project pollutants because it conducted air quality modeling to show that the PM10 and carbon monoxide NAAQS would not be violated, and simply assumed, without any credible technical analysis, that the PM2.5 and NO2 NAAQS would not be violated.

79. EPA's process for setting NAAQS focuses on the health effects of exposure to each regulated pollutant. None of these standards take into account the interactions among these pollutants in the ambient air or their cumulative impact on human health.

80. Communities located adjacent to heavily trafficked highways are exposed to the full array of pollutants emitted from highways, including the four pollutants regulated in the ambient air by NAAQS – for which EPA now requires near-road monitoring to protect communities from violations of each separate NAAQS – volatile organic compounds, and 92 toxic air pollutants emitted from tailpipes which are not limited by ambient air quality standards.

81. Peer-reviewed literature reporting the results of health effects research published since 2000 provides a robust credible body of scientific evidence that demonstrates the adverse health effects of exposure to the full array of pollutants contained in highway emissions.

82. This body of scientific evidence demonstrates that adverse health effects still occur, even when exposure to individual pollutants regulated by a NAAQS meet the applicable standard.

83. With respect to individual pollutants, EPA acknowledges that the NAAQS are not set at levels that prevent all health effects. EPA found that there is no safe level of exposure to PM or nitrogen oxides. In the *ISA for PM,* EPA concluded that "evidence from the studies evaluated supports the use of a no-threshold, log-linear model." *ISA for PM,* at 2-25. EPA reached a similar conclusion with respect to NO2:

> In studies that have examined concentration-response relationships between NO2 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.

ISA for Oxides of Nitrogen, at 5-15.

84. EPA's findings that adverse health effects occur below the NAAQS and the fact that cumulative effects of exposure to multiple pollutants are not considered when setting NAAQS, means that evidence showing that concentrations of PM2.5, PM10 and NO2 are below their respective NAAQS cannot support a conclusion that exposure to existing concentrations of each of these pollutants does not contribute to the adverse health outcomes observed in the near-highway communities along I-70 or that adverse health effects are irrelevant to the duty under NEPA to compare alternatives based on their impact on health.

85. An assessment of the comparative health risks and impacts associated with a highway project and any alternative must address the cumulative health risks attributable to exposure to the full array of pollutants emitted from highways. *See* 40 C.F.R. §§ 1502.14, 1508.8.

86. The "effects" of an action "includes … health, whether direct, indirect, or cumulative." 40 C.F.R. § 1508.8.

87. The Final EIS selectively considers a few studies published between 2000 and 2010 which reached inconclusive results from then-available data to establish a relationship between adverse health effects and exposure to highway pollution.

88. The Final EIS fails to discuss health effect research studies published between 2000 and 2010 that find causal relationships between exposure to highway emissions and adverse health effects. The Final EIS also fails to discuss all health effects research reports published since 2010 that discuss this relationship, including recent studies that Petitioners submitted at a meeting with the Director of the FHWA Colorado Division.

89. The Final EIS violates NEPA and 40 C.F.R. §§ 1502.1, 1502.14 and 1502.16 because it fails to provide full and fair discussion of the cumulative effects that all pollutants emitted from the Project will have on community health.

90. The Final EIS violates NEPA and 40 C.F.R. § 1502.22 because it fails to obtain necessary data to assess the cumulative impacts on the health and mortality risks from community exposure to Project emissions.

91. The Final EIS violates NEPA and 40 C.F.R. §§ 1500.1(b) and 1502.24 because it fails to consider credible, peer-reviewed data relevant to assessing the cumulative impacts on health from and community exposure to Project emissions, and is, therefore, inaccurate, misleading, and lacks scientific integrity.

Sixth NEPA Claim:
LIMITED PURPOSE AND NEED BYPASSES ALTERNATIVES THAT RESTORE AND ENHANCE THE HUMAN ENVIRONMENT

92. FHWA unlawfully defined the purpose and need for the I-70 Project in a manner that fails to include explicitly, and effectively forecloses, transportation actions and policies that implement the statutory purposes defined by NEPA, i.e., to "assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing

surroundings; … and enhance the quality of renewable resources" by reducing dangerous air pollution or preventing public exposure to harmful pollutants. 42 U.S.C. § 4331 (b)(2) & (6).

Seventh NEPA Claim:
REFUSAL TO CONDUCT FULL IMPACT ANALYSIS OF I-76/I-270 ALTERNATIVE BYPASSES ALTERNATIVES THAT RESTORE AND ENHANCE THE HUMAN ENVIRONMENT AND PARTIALLY MEET PURPOSE AND NEED

93. NEPA requires agencies to define the purpose and need for the proposed action, but does not allow agencies to remove alternatives from consideration if they partially satisfy the purpose and need. 40 C.F.R. § 1502.13.

94. Chapter 2 of the Final EIS describes the purpose and need for the I-70 Project:

> The purpose of the project is to implement a transportation solution that improves safety, access, and mobility and addresses congestion on I-70 in the project area. … [The need] results from transportation infrastructure deficiencies, increased transportation demand, limited transportation capacity and safety concerns.

Final EIS, at 2.4, 2.5.

95. FHWA arbitrarily and capriciously failed to consider the extent to which the purpose and need could be satisfied by expanding capacity on the I-76/I-270 alternative and adopting policies and operational practices designed to reduce traffic using a restored 46th Avenue urban arterial and reduce emissions from heavy duty vehicles and other traffic that would continue to use 46th Avenue for access to local destinations.

Eighth NEPA Claim:
FAILURE TO USE CORRECT AIR QUALITY MODELING TOOLS FOR PM2.5 EMISSIONS

96. An Environmental Impact Statement shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of NEPA sections 101 and 102(1) and *other environmental laws* and policies. 40 C.F.R. § 1502.2(d) (emphasis added).

97. An impact "significantly" affects the human environment for purposes of discussion in an EIS if "the action threatens a violation of Federal, State or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10).

98. The CAA requires that the NAAQS for PM2.5, 40 C.F.R. § 50.18, shall be attained and maintained to protect human health and the environment. 42 U.S.C. §§ 7401 *et seq*.

99. Evidence in the Air Quality Technical Report, Attach. J to the Final EIS, demonstrates that Project emissions of PM "threatened" to violate the NAAQS for PM2.5. *See* Final EIS, Vol. II, Attach. J, discussed below.

100. All particles included in PM2.5 are a portion of total PM10. A comparison of the estimated emissions for each Project alternative shows that PM2.5 emissions in 2035 (0.38 tons/day) are expected to be 57.5% of the total emissions of PM10 (0.66 tons/day). *See id.,* Table 22 (PM2.5 emissions inventories (tons per day)) and Table 23 (PM10 emissions inventories), at 84.

101. The modeled concentrations of PM10 added to the ambient air by particles emitted from the Preferred Alternative was 57 $\mu g/m^3$. *See id.*, Table 20, at 78.

102. Using the 57.5% portion of PM10 emissions that are in the size regulated as PM2.5 (obtained from comparing the emissions inventories in Tables 22 and 23), an estimate of PM2.5 concentrations caused by Project emissions can be made by calculating 57.5% of the ambient concentration modeled for PM10.

103. For the purpose of estimating whether I-70 Project emissions "threaten" a violation of the NAAQS, this simple short-hand method shows that Project emissions of PM2.5 could contribute (57 $\mu g/m^3$ x .575) approximately 32 $\mu g/m^3$ to 24-hour concentrations of PM2.5.

104. The 24-hour NAAQS for PM2.5 is 35 $\mu g/m^3$. 40 C.F.R. § 50.18.

105. Available data from the PM2.5 monitoring station selected as the background monitor for the conformity determination, showed that the 98th percentile value that EPA requires be used to determine compliance with the NAAQS for PM2.5, is above 20 $\mu g/m^3$. If Project emissions are added to background concentrations, as required by section 9.3.3 of EPA's Hot-spot Guidance for determining whether future highway emissions are likely to violate the NAAQS, the total (32 $\mu g/m^3$ of Project emissions added to 20 $\mu g/m^3$ of background) could exceed 50 $\mu g/m^3$ – **which would violate the NAAQS by a wide margin.**

106. FHWA rejected consideration of this short-hand calculation as not being a scientifically-validated technical procedure for predicting actual future concentrations of PM2.5.

107. The short-hand procedure was not proposed as a procedure to predict actual future concentrations, but rather as a credible approximation of expected concentrations sufficient to show that a violation is "threatened" for the purpose of triggering the obligation to employ accurate scientific methods to determine whether the PM2.5 NAAQS will be violated, namely the validated air quality dispersion models developed and approved by EPA for modeling highway emissions.

108. The ROD acknowledges that the PM2.5 concentration at the I-25/8th Avenue monitoring station was 30 $\mu g/m^3$. ROD at 116. FHWA contends that this value can be relied upon to assume that the NAAQS will not be violated by future Project emissions because that segment of I-25 "has higher ADT [average daily traffic] than the current I-70 Project area." *Id.* at 116.

109. PM2.5 measured at a site where traffic is greater than baseline traffic on I-70 in 2015 is irrelevant to predicting future PM2.5 concentrations when I-70 traffic is expected to be 35% greater than in 2015.

110. The ROD does not provide the ADT data relied upon by FHWA for anyone else to compare current traffic at the I-25 monitor with expected future traffic on I-70.

111. The ROD provides no relevant information to compare the average daily traffic at I-25 in 2015 with the higher ADT that will be on I-70 in the future. There is no evidence in the record identifying the ADT at the I-25/8th Avenue monitor or showing that concentrations measured at that location today will be less than the NAAQS if traffic were to reach the expected ADT on I-70 by 2035.

112. It is arbitrary and capricious to compare current traffic on I-25 with current traffic on I-70 because the data necessary to make a credible comparison in 2015 is not relevant to predicting future concentrations on I-70 and the alleged data relied upon is not in the record.

113. In response to comments requesting that emissions of PM2.5 be modeled using the same procedures used to model PM10, FHWA responded that "extrapolating the existing ratio of PM2.5 to PM10 to other scenarios in an effort to predict violations of the NAAQS is not scientifically valid, as particulate emissions in different size fractions come from multiple different sources, not all of which vary at the same rate with changes between build alternatives or traffic loads." *See* Final EIS, Vol. III, Attach Q., at S-120, Response B1.

114. The variables that make the short-hand calculation discussed above "not scientifically valid" to predict violations are the same variables that are accounted for when applying the EPA-approved emissions and air quality dispersion models. Thus, FHWA implicitly concedes that the models used to predict PM10 concentrations are the appropriate tools to determine whether the Project "will or will not achieve the requirements of" the Clean Air Act, as required by 40 C.F.R. § 1502.2(d).

115. In the Air Quality Technical Report and in various responses to comments FHWA asserted that the proposed short-hand method is not needed to estimate future impacts of Project PM2.5 emissions because: a) future emissions are expected to decrease with time over the life of the Project, as demonstrated by the emissions data reported in Table 22,

and b) currently modeled PM2.5 levels do not violate the NAAQS for PM2.5. Final EIS, Attach. J., at 84.

116. FHWA disclosed for the first time in its 2016 response to comments that the Project emissions data showing reductions in Project emissions between 2015 and 2035, as reported in Tables 22 and 23 for PM2.5 and PM10, only represent the 13% of total project emissions emitted from tailpipes, brake and tire wear. *See* Final EIS, Vol. II, Attach. Q, at S-117, Response X.

117. FHWA discloses for the first time in its 2016 response to comments that "the vast majority of PM10 emissions (87 percent) modeled are from re-entrained road dust." *Id.*

118. FHWA acknowledges in response to comments that its previous claim that PM emissions will decline is not true for "road dust": "significant reductions in emissions for all health-related pollutants (except for road dust)…." *Id.,* at S-120, Response B1.

119. Thus, FHWA acknowledges that 87% of PM10 emissions will *increase* over the life of the Project. The assertion that PM emissions will decrease is misleading, inaccurate and lacks scientific integrity.

120. Moreover, the magnitude of the increase in 87% of Project emissions is not discussed or considered anywhere in determining whether to model future emissions for PM2.5.

121. The short-hand procedure for estimating the share of PM10 emissions that are PM2.5 credits to all Project emissions the reductions that will be achieved between 2015

and 2035 for the 13% of emissions that are not road dust, but underestimates the likely impact of Project emissions because the proportionate relationship between PM2.5 and PM10 reported in Tables 22 and 23 does not account for the 87% of emissions that will increase over the life of the Project.

122. FHWA offers no alternative method or data analysis in the record to demonstrate that the road dust portion of the I-70 Project emissions -- the 87% of Project emissions that are expected to increase – will not threaten to violate the NAAQS for PM2.5.

123. FHWA relies on PM2.5 monitoring data to conclude that Project emissions will not threaten the NAAQS. The record, however, only includes data from the I-25/8th Avenue monitor showing a concentration at 30 $\mu g/m^3$ that allows only 5 $\mu g/m^3$ of PM2.5 to be added without violating the NAAQS.

124. Given the PM10 modeling that shows the Project will add 57 $\mu g/m^3$ to background levels, FHWA provides no credible basis for assuming that the Project will add no more than 5 $\mu g/m^3$ to background concentrations of PM2.5.

125. The damage to the environment and public health that will result if PM2.5 emissions cause or contribute to violations of the NAAQS is severe, including increased incidence of asthma on-set among children, and increased cardiovascular mortality among adults. The severity of this threat requires a credible hot-spot analysis using modeling tools approved by EPA for this purpose.

126. The cost of resolving this uncertainty is minimal compared to the magnitude of the burden on the environment and public health if FHWA's capricious disregard of these impacts is misplaced.

127. The Final EIS violates NEPA and 40 C.F.R. §§ 1500.1(b), 1502.1, 1502.2(d), 1502.16, 1502.22 and 1502.24 by not using the scientifically validated methods approved for determining whether Project emissions will or will not violate the NAAQS for PM2.5 when a reasonable approximation of the impact such emissions will likely have on ambient air quality is available from data in the record that suggests a violation of the NAAQS for PM2.5 is "threatened."

128. If the Project will cause or contribute to violation of the NAAQS for PM10, the EIS is also deficient, in violation of NEPA, for failing to include any discussion of the adverse environmental impacts, regulatory burden and costs this violation will impose on Colorado, the City of Denver, and emitting industries that may be required to reduce emissions in order to comply with the NAAQS to the extent needed to accommodate the increased pollution added by the Project.

129. If the Project will cause or contribute to violation of the NAAQS for PM2.5, the EIS is deficient in violation of NEPA for failing to include any discussion of the alternatives that could avoid violating the NAAQS for PM2.5, and failing to discuss mitigation measures that will be necessary to correct the violation of the NAAQS if the Project is implemented.

Ninth NEPA Claim:

FAILURE TO ACKNOWLEDGE THAT PREDICTED PM10 EMISSIONS WILL EXCEED THE CAA INCREMENT TO PREVENT THE SIGNIFICANT DETERIORATION OF AIR QUALITY

130. An "Environmental Impact Statement shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of NEPA sections 101 and 102(1) and *other environmental laws* and policies." 40 C.F.R. § 1502.2(d) (emphasis added).

131. An impact "significantly" affects the human environment for purposes of discussion in an EIS if "the action threatens a violation of Federal, State or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10).

132. The increment for PM10 limits the deterioration of PM10 concentrations in areas cleaner than the NAAQS that have been designated as "attainment" pursuant to § 107(d) of the CAA.

133. The Denver metropolitan area had been designated nonattainment for PM10 prior to 2002, but was redesignated as "attainment" on October 16, 2002. 67 Fed. Reg. 58,335 (Oct. 16, 2002) (attached as Exhibit 15).

134. The Denver metropolitan area is a Class II attainment area. 42 U.S.C. § 7472(b).

135. The maximum 24-hour Class II increment for PM10 is 30 $\mu g/m^3$. 40 C.F.R. § 51.166(c).

136. The air quality modeling of I-70 Project emissions predicts that the Project will add 41 $\mu g/m^3$ or more to 24-hour background concentrations of PM10 on six days during each five year period.

137. EPA interprets the increment requirements of the Clean Air Act to include "air quality deterioration caused by mobile sources." 53 Fed. Reg. 40,662 (Oct. 17, 1988).

138. The EIS mentions the requirements of the Colorado Air Pollution Control Act that require the prevention of significant deterioration of air quality, but fails to include any discussion or technical analysis to determine whether Project emissions will violate the increment for PM10 in the Project area, and if so, by how much.

139. If the Project will cause or contribute to violation of the increment for PM10, the EIS is deficient, in violation of NEPA, for failure to include any discussion of the adverse environmental impacts, regulatory burden, and costs this violation will impose on Colorado, the City of Denver, and emitting industries that may be required to reduce emissions in order to accommodate the increased pollution added by the Project.

140. If the Project will cause or contribute to violation of the increment for PM10, the EIS is deficient in violation of NEPA for failing to include any discussion of the alternatives that could avoid violating the increment for PM10, and failing to discuss mitigation measures that will be necessary to correct the violation of the increment.

Tenth NEPA Claim:
FAILURE TO CONSIDER MITIGATION MEASURES TO PROTECT RESIDENTS FROM ADVERSE HEALTH EFFECTS OF PROJECT AIR POLLUTANTS

141. NEPA requires that an EIS "discuss means to mitigate adverse environmental impacts," which includes avoiding the impacts by not taking the action, or compensating for the impacts by providing alternative resources or environments. 40 C.F.R. §§ 1502.14(f), 1502.16(h), 1508.20.

142. To protect residents and their families from adverse health risks associated with exposure to air pollutants emitted from an expanded I-70, Petitioners requested that a number of mitigation measures be considered to reduce public exposure to highway pollutants.

143. In comments on the Supplemental Draft EIS, Petitioners requested that FHWA consider removing from I-70 emissions from heavy duty vehicles, except emergency vehicles, by excluding such vehicles from the segment between Washington Boulevard and Colorado Boulevard, where residences are located in closest proximity to the highway, populations adjacent to the highway are most exposed, and evidence of adverse health outcomes indicates the greatest ongoing harm from exposure to highway pollutants.

144. In the Sierra Club comments on the Final EIS, Petitioners renewed this request and also requested consideration of other mitigation measures, including operational limitations on truck access to the highway segments where trucks are permitted, and

time of day limitations to prevent trucks from increasing pollution emissions during periods of peak travel when traffic congestion is greatest, speeds most restricted, emissions are highest and pollutant exposure to residents and children attending schools are greatest.

145. FHWA refused to undertake any analysis of these mitigation measures, stating that "moving trucks to other alignments isn't a feasible mitigation measure because no routes can be identified that would not affect other neighborhoods, and limiting trucks could impact many commercial uses in this segment of the I-70 corridor that rely on trucking." SDEIS, Attach. Q, Response to Comments, Doc. No. 754, Response H1.

146. FHWA's failure to take a hard look at the overall health benefits that could be achieved by dispersing truck trips away from the interstate lanes where emissions are most concentrated, and onto other east-west routes including I-270, 58th Avenue (which passes through commercial/industrial land uses with few residences), and other local arterials where pollutant exposures would be significantly lower than adjacent to I-70, was arbitrary and capricious.

PART III: FEDERAL-AID HIGHWAY ACT CLAIMS

147. Section 109(h) of the Federal-Aid Highway Act requires the Secretary of Transportation to undertake, for all new highway projects eligible for federal funding under 23 C.F.R. § 771.107(b), a three-step evaluation of adverse 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).

148. The Secretary adopted Guidelines for implementation required by the Act. The rule barred federal approval of a highway project unless documentation showed:

> that the development of the project has taken into consideration the need for fast, safe, and efficient transportation together with highway costs, traffic benefits and public services … and other economic, social and environmental effects … include[ing]: (A) Identification of the adverse effects, (B) Appropriate measures to eliminate or minimize the adverse effects, (C) The estimated costs (expressed in either monetary, numerical or qualitative terms) of the measures considered.

23 C.F.R. § 790.8(b). Defendants' rule explained that the purpose of these analyses is "to assure that . . . final decisions on the project are made in the best overall public interest." *Id.*, § 790.1.

149. The initial Guidelines were subsequently integrated into the environmental review procedures provided in 23 C.F.R. Part 771.

150. In acting on the I-70 Project, FHWA has violated 23 U.S.C. 109(h) by failing to:

a. identify the adverse effects of Project emissions on human health, on attainment and maintenance of the NAAQS for PM2.5, and on the increment to prevent deterioration of air quality for PM10;

b. identify the measures needed to eliminate or minimize these adverse effects;

c. estimate the costs of measures needed to eliminate or minimize these adverse effects;

d. weigh these costs in determining whether the expansion of I-70, as proposed, is in the best overall public interest; and

e. adopt as requirements in the ROD, as required by 23 C.F.R. §§ 771.105(d) and 109(d), mitigation measures sufficient to eliminate the adverse health impacts of air pollutants the Project, and prevent violations of the NAAQS for PM2.5 and the increment for PM10.

151. In support hereof, Petitioners incorporate herein the claims in Part II describing the adverse effects not considered, and the mitigation measures proposed but not considered.

152. Petitioners are harmed by these violations, and the remedies requested would redress Petitioners' injuries.

PART IV: CLEAN AIR ACT CLAIMS

INTRODUCTION

153. Section 176(c) of the Clean Air Act (CAA) requires that the Secretary of Transportation must demonstrate that pollutants emitted from a major highway, such as the I-70 Project, will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) before a transportation project may be approved or funded by the U.S. Department of Transportation. 42 U.S.C. § 7506(c).

154. Petitioners allege that the determination ("Conformity Determination") by the Secretary, acting through the FHWA, that the I-70 Project conforms to applicable CAA requirements does not satisfy such requirements, is inconsistent with law, arbitrary and capricious, and not supported by sufficient evidence.

155. Section 176(c)(1) declares that "[n]o Department of the Federal Government shall engage in, support in any way, or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved or promulgated under section 7410 of this title. The assurance of conformity to such an implementation plan shall be an affirmative responsibility of the head of such department." 42 U.S.C. § 7506(c)(1).

156. Section 176(c)(1) declares that –

> Conformity with an implementation plan means:
>
> (A) conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and
>
> (B) that such activities will not--
> (i) cause or contribute to any new violation of any standard in any area;
> (ii) increase the frequency or severity of any existing violation of any standard in any area; or
> (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

42 U.S.C. § 7506(c)(1).

157. The statutory requirements for making Conformity Determinations established by section 176(c) of the Clean Air Act are implemented by "criteria and procedures for demonstrating and assuring conformity in the case of transportation … projects" promulgated by the U.S. Environmental Protection Agency (EPA) with the concurrence of the Secretary of Transportation pursuant to section 176(c)(4)(B) of the Clean Air Act. 42 U.S.C. § 7506(c)(4)(B).

158. The ROD for the I-70 Project, and any subsequent approvals and permits, including any Project Agreement, financial plan and project management plan required by 23 U.S.C. § 106, may not be lawfully issued because any such approvals are prohibited by law without first making a Conformity Determination that complies with the statutory and regulatory conformity tests in section 176(c) of the CAA, and 40 C.F.R. Part 93.

159. No authorization for an award of federal funds pursuant to 23 U.S.C. § 106 has yet been granted for the I-70 Project.

160. No approval of plans, specifications and estimates for the I-70 Project, as required by 23 U.S.C. § 106(a), has yet been granted by the FHWA.

EPA'S CONFORMITY RULES

161. EPA promulgated criteria and procedures for demonstrating and assuring the conformity of transportation projects in 40 C.F.R. Part 93 ("conformity rule").

162. EPA's conformity rule requires that FHWA make the demonstration of conformity for the I-70 Project "according to the consultation requirements of § 93.105(c)(1)(i) and the methodology requirements of § 93.123." 40 C.F.R. § 93.116.

163. EPA's conformity rule prescribes substantive criteria and procedures for demonstrating and assuring conformity for all transportation projects and pollutants for which a Conformity Determination must be made. 40 C.F.R. § 93.123(c)(1). Petitioners claim that FHWA failed to comply with specific provisions of this rule in making the Conformity Determination for I-70.

164. EPA's Conformity Rule requires that the Conformity Determination for projects like the I-70 Project that trigger a quantitative hot-spot analysis for PM10, such as the I-70 Project, must be based on a quantitative "hot-spot analysis," as defined by 40 C.F.R. § 93.101, that applies "quantitative analysis methods" prescribed by EPA. 40 C.F.R. § 93.123(b)(1), 93.123(b)(4).

165. EPA's conformity rule defines "Hot-spot analysis" as "an estimation of likely future localized CO, PM10, and/or PM2.5 pollutant concentrations and a comparison of those concentrations to the national ambient air quality standards [NAAQS]. Hot-spot analysis assesses impacts on a scale smaller than the entire nonattainment or maintenance area, including, for example, congested roadway intersections and highways or transit terminals, and uses an air quality dispersion model to determine the effects of emissions on air quality." 40 C.F.R. § 93.101 Definitions.

166. After publication of notice in the Federal Register, and an opportunity for comment, EPA promulgated the "quantitative analysis methods" required by § 93.123(b) as "Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas (EPA 420-B-10-040)" [hereinafter "2010 Hot-spot Guidance"]. 75 Fed. Reg. 79,370 (Dec. 20, 2010) ("With today's notice …, the requirement to conduct quantitative PM hot-spot analyses as required by 40 C.F.R. 93.123(b)(4) is now in effect….")

167. EPA's Hot-spot "guidance describes conformity requirements for quantitative PM hot-spot analyses; provides technical guidance on estimating project emissions using

EPA's MOVES model, … and other methods; outlines how to apply air quality dispersion models for quantitative PM hot-spot analyses; and includes other resources and examples to assist in conducting quantitative PM hot-spot modeling analyses." 75 Fed. Reg. 79,371. FHWA unlawfully failed to comply with specific provisions of these requirements in making the Conformity Determination for I-70.

168. EPA's conformity rule prescribes procedures for consulting with and involving the public in the process for demonstrating and assuring conformity for all transportation projects for which a Conformity Determination must be made. 40 C.F.R. § 93.105(e). FHWA unlawfully failed to comply with specific provisions of this rule in making the Conformity Determination for I-70.

DETERMINING DESIGN VALUES

169. EPA requires that the "design value" for a project be used to determine whether project emissions violate a NAAQS. "For conformity purposes, a design value is a statistic that describes a future air quality concentration in the project area that can be compared to a particular NAAQS." 2010 Hot-spot Guidance, section 9 Design Values, at 105.

170. Calculating the "design value" properly is critical to determining whether a transportation project "will not … cause or contribute to any new violation of any standard" in order to qualify for federal funding or approval." 42 U.S.C. § 7506(c)(1).

171. EPA describes how a "design value" is calculated:

> In general, the PM concentrations estimated from air quality modeling (from Step 5) are then combined with background concentrations (from Step 6) at the receptor locations for both the build and no-build scenarios. The resulting statistic is referred to as a design value; how it is calculated depends on the form of the NAAQS. If the design value in the build scenario is less than or equal to the relevant PM NAAQS at appropriate receptors, then the project meets conformity requirements.

2010 Hot-spot Guidance, § 3.8 at 24.

FACTS RELATED TO CONFORMITY DETERMINATION

172. The I-70 Central Project (I-70 Project) proposes to expand an approximately 10-mile section of existing I-70 from 6 to 10 primary travel lanes, between the interchange with I-25 known as the "mousetrap" through the densely-populated Denver neighborhoods of Globeville, Elyria-Swansea, and northern Park Hill to Chambers Road, adding one new tolled express lane in each direction, removing the I-70 Viaduct, lowering the highway between Brighton Boulevard and Colorado Boulevard, and placing a four-acre cover over a portion of the lowered highway. ROD at 30.

173. The I-70 Project is:

a. a "highway project" within the meaning of that term as defined in 40 C.F.R. § 93.101;

b. a "regionally significant project" within the meaning of that term as defined in 40 C.F.R. § 93.101;

c. an "FHWA/FTA project" within the meaning of that term as defined in 40 C.F.R. § 93.101;

d. subject to the project level conformity tests enacted in 42 U.S.C. § 7506(c)(1)(A) and (B), and the regulatory tests promulgated by the U.S. Environmental Protection Agency in 40 C.F.R. § 93.116; and

e. an "expanded highway project[] that ha[s] a significant increase in the number of diesel vehicles" within the meaning of that phrase in 40 C.F.R. § 93.123(b)(1)(i).

174. In the 2008 Draft EIS, FHWA did not include a quantitative hot-spot analysis for the I-70 Project because EPA had not yet issued hot-spot guidance for a quantitative analysis.

PROJECT EMISSIONS ANALYSIS FOR SUPPLEMENTAL DRAFT EIS

175. After EPA's promulgation of quantitative hot-spot guidance in 2010, FHWA prepared a Supplemental Draft EIS for the Project that included a quantitative emissions analysis. *See* Supplemental Draft EIS, Attach. J, Air Quality Technical Report § 1.2 at 2.

176. The SDEIS was released to the public in August of 2014.

177. FHWA used EPA's hot-spot analysis procedures to estimate emissions for each project alternative to compare the air quality impacts of alternatives to satisfy NEPA.

178. FHWA determined that the year of highest emissions from the Project would occur in 2035. SDEIS Attach. J, Air Quality Technical Report at 28.

179. Traffic in the I-70 corridor during 2035 was estimated by a trip-based traffic demand model used to quantify expected future traffic.

180. Expected future traffic was used as an input to EPA's Motor Vehicle Emissions Simulator (MOVES) model, which provides emission rates for multiple classes of light,

medium and heavy duty gasoline and diesel vehicles that are combined with future traffic projections for each vehicle type to estimate future emissions from a highway project. *See*, SDEIS Attach. J, Air Quality Technical Report, Table 2, at 16.

181. In the SDEIS, FHWA estimated emissions from five project alternatives, including the no-build alternative, a Revised Viaduct Alternative, and a Partial Cover Lowered Alternative with either one or two covers. The Revised Viaduct Alternative would re-build and widen the Viaduct, north and south of the highway, and would include either three general purpose lanes in each direction, or three general purpose lanes plus two managed (toll) lanes in each direction. The Partial Cover Lowered Alternative included a Basic Option (a cover over the four blocks between Columbine and Clayton Streets) and a Modified Option, which included two covers, one between Clayton and Columbine Streets, and another cover between St. Paul and Cook streets. Both the Partial Cover Lowered Basic and Partial Cover Lowered Modified Alternatives included an option for either three general purpose lanes in each direction, or three general purpose lanes plus two toll lanes in each direction. *See* SDEIS, Attach. J, Table 6, at 27.

182. EPA's Hot-spot Guidance explains that the impact Project emissions will have on ambient air quality are determined by using an air quality model:

> An air quality model estimates PM concentrations at specific points in the project area known as 'receptors.' Emissions that result from the project (including those from vehicles, dust, and construction from Steps 3 and 4) as well as any other nearby emission sources that are affected by the project (e.g., expanded locomotive emissions at a freight terminal) are included in the selected air quality

> model, which predicts how emissions are dispersed based on meteorological and other input data.

2010 Hot-spot Guidance, § 3.6, at 23.

183. FHWA selected AERMOD as the air quality model to simulate the dispersion and transport of emissions from the planned highway project to estimate the concentrations of pollutants expected to occur at designated receptor locations downwind from the highway. SDEIS Attachment J, Air Quality Technical Report, at 23.

184. The AERMOD model estimated that particulate emitted from traffic in the Project corridor would add 57 $\mu g/m^3$ or more to background concentrations of PM_{10} for five of the project alternatives, but that the Partial Cover Lowered Alternative Basic Option with managed [toll] lanes, i.e., the option later identified as the preferred alternative, would add only 38 $\mu g/m^3$. SDEIS Attachment J, Air Quality Technical Report, Table 20, at 65.

185. The traffic modeling used to estimate emissions from the expanded I-70 differed less than 1% between project alternatives. I-70 East Supplemental Draft EIS, Attach. E, Traffic Technical Report, Figs. 86 and 88, at 95-96.

186. The expected winter day emissions of PM-10 from the build alternatives are virtually identical: 0.68 t/day. Air Quality Technical Report, Table 23, at 69.

187. FHWA concluded that PM emissions did not differ significantly between alternatives:

> 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.

See SDEIS Attachment J, Air Quality Technical Report, at 68.

188. In the SDEIS, FHWA determined that background PM_{10} concentrations in the area of the Project are 113 $\mu g/m^3$. SDEIS Attachment J, Air Quality Technical Report, Table 20, n1, at 65.

189. Despite evidence showing no significant difference in traffic or emissions between build alternatives, the air quality modeling predicted that one alternative would add 33% less PM to background air quality than any other alternative. When modeled future concentrations contributed by Project emissions are added to background concentrations, the Basic Option with managed [toll] lanes produced total concentrations that complied with the NAAQS for PM10, whereas all other build alternatives violated the NAAQS. SDEIS Attach. J, Air Quality Technical Report, Table 20, at 65.

190. The Sierra Club submitted comments objecting to the credibility of modeling showing no violation for one project alternative when the other five alternatives violated the NAAQS by large amounts because the evidence provided by FHWA in the Supplemental DEIS showed that traffic volumes and Project emissions could not plausibly explain why one of the Project "build" alternatives produced concentrations of PM_{10} in the ambient air a minimum of 33% less than the other Project alternatives. Sierra Club Comments on the SDEIS, Special Interest Groups and Businesses, at 102-103.

PROJECT EMISSIONS ANALYSIS FOR FINAL EIS

191. The Final EIS was released to the public on January 15, 2016.

192. For the Final EIS, FHWA analyzed three action alternatives, including a Revised Viaduct Alternative, the Partial Cover Lowered Alternative Phase 1, and the Partial Cover Lowered Alternative. See Final EIS Attach. J, Air Quality Technical Report Table 20, at 78.

193. The Preferred Alternative in the Final EIS was the Partial Cover Lowered Alternative Phase 1 with Managed Lanes Option. Final EIS Executive Summary at ES-12. This alternative was the selected alternative in the ROD. *See* ROD, at 2.

194. FHWA determined that the year of highest emissions from the Project would occur in 2035. See Final EIS Attach. J, Air Quality Technical Report, at 35.

195. Traffic in the I-70 corridor during 2035 was estimated by using the Compass traffic demand model. See Final EIS Attach. J, Air Quality Technical Report, at 2.

196. FHWA selected AERMOD as the air quality model to simulate the dispersion and transport of emissions from the planned highway project to estimate the concentrations of pollutants expected to occur at designated receptor locations downwind from the highway. Final EIS Attach. J, Air Quality Technical Report, at 30**.**

197. The AERMOD model estimated that particulate emitted from traffic in the Project corridor would add 61 $\mu g/m^3$ or more to background concentrations of PM_{10} for all other project alternatives, but that the Partial Cover Lowered Alternative Basic Option with managed lanes, would add only 57$\mu g/m^3$. Final EIS Attach. J, Air Quality Technical Report, Table 20, at 78.

198. For the Final EIS, FHWA revised the hot-spot analysis by lowering the PM_{10} background concentration from 113 $\mu g/m^3$ to 89 $\mu g/m^3$. *See* Final EIS, Attach. J, Air Quality Technical Report Table 20, n.1, at 78.

199. To calculate the background concentration, the FINAL EIS used the fourth-highest day of historical background monitoring data from 2011-2013. *See* Final EIS, Attach. J, Air Quality Technical Report, at 45.

200. In the Final EIS, background concentrations were 89 $\mu g/m^3$, and Project concentrations were 61 $\mu g/m^3$, for a total design value of 150 $\mu g/m^3$. Final EIS Attach. J, Air Quality Technical Report, Table 20, at 78.

201. Neither the Final EIS nor the revised Air Quality Technical Report released for comment with the Final EIS disclosed that the background value had been reduced by 24 $\mu g/m^3$.

202. Neither the FINAL EIS nor the revised Air Quality Technical Report release for comment with the FINAL EIS disclosed why the background value had been changed.

PROJECT EMISSIONS ANALYSIS FOR CONFORMITY DETERMINATION

203. The Draft Air Quality Conformity Determination was released to the public with a 30-day comment period on December 16, 2016. Draft Air Quality Conformity Determination, at 1.

204. Sierra Club commented that the Conformity Determination constituted a significant federal action under NEPA that required a 45-day comment period. See ROD Attach. F, Sierra Club Preliminary Comments on Air Quality Documents, at 70-71.

205. The Final Conformity Determination was released to the public as Attachment C-7 of the Record of Decision on January 19, 2017.

206. The Conformity Determination used historical background data resulting in a background value of 113/ $\mu g/m^3$. ROD, Attach. C-7, Conformity Determination, at 9.

207. In the Conformity Determination, concentrations added by Project emissions dropped from 57 $\mu g/m^3$ to 41.1 $\mu g/m^3$, a 28% decrease in the expected Project concentrations. *Id.,* Table 2, at 10.

208. Between the FINAL EIS and the Conformity Determination, EPA noted that background PM10 levels should have been 113 $\mu g/m^3$ instead of 89 $\mu g/m^3$, which required that Project concentrations decrease from 57 $\mu g/m^3$ to 41 $\mu g/m^3$ for the Project's design value to remain just 0.836 $\mu g/m^3$ below the level of the PM10 NAAQS, at 154.136 $\mu g/m^3$.

209. Per EPA guidance, the 24-hour PM10 design value is rounded to the nearest 10 µg/m3. For example, 155.000 rounds to 160, and 154.999 rounds to 150. ROD, Attach. C-7, Conformity Determination, at 10.

210. The Conformity Determination changed multiple inputs to the hot-spot analysis, including using 2040 as opposed to 2035 as the year of peak traffic and peak emissions. *Id.,* at 4.

211. The Conformity Determination changed the traffic demand model used to quantify future traffic from the trip-based Compass model used in the Final EIS to the activity-based Focus model. *Id.,* at 4.

212. The Conformity Determination changed the emission factors for road dust relying on mitigation commitments for road dust not disclosed in the record. *Id.,* at 9.

213. Sierra Club twice commented that FHWA had not explained to the public what factors were changed and how they affected the air quality analysis, and requested technical information and policy analysis not identified as publicly available by the agency. See Sierra Club Preliminary Comments on the Hot Spot-Analysis and Proposed Conformity Determination, ROD Attachment F, at 62-71, Sierra Club Partial Comments on the Hot-Spot Emissions Analysis and Proposed Conformity Determination, ROD, Attach. F, at 266-276.

First CAA Claim:
BACKGROUND AIR QUALITY USED TO CALCULATE "DESIGN VALUE" NOT LAWFULLY DETERMINED

214. FHWA erred in making the Conformity Determination by determining the "design value" for the I-70 Project without accounting for increasing concentrations of background air quality that Colorado expects will result from increased emissions from future growth in the area affected by I-70 Project emissions.

215. The "design value" used for the final Conformity Determination was calculated by combining modeled Project emissions for 2040 with historical background air quality from 2014.

216. FHWA impermissibly used historical background air quality that does not account for the effects of growth on background air quality rather than modeled *future* air quality when calculating the "design value" for the I-70 Project in violation of EPA's conformity

rule and Hot-spot Guidance. 40 C.F.R. § 93.123(c)(1) ("Estimated pollutant concentrations must be based on the total emissions burden which may result from the implementation of the project, summed together with *future* background concentrations.") (emphasis added).

217. EPA's 2010 Hot-spot Guidance requires that the Project "design value" be determined for the analysis year when a violation of the NAAQS is most likely:

> Conformity requirements are met if the analysis demonstrates that no new or worsened violations occur in the year(s) of highest expected emissions – which includes the project's emissions in addition to background concentrations. Areas should analyze the year(s) within the transportation plan or regional emissions analysis, as appropriate, during which:
> • Peak emissions from the project are expected; and
> • A new NAAQS violation or worsening of an existing violation would most likely occur due to the cumulative impacts of the project and background concentrations in the project area.

2010 Hot-spot Guidance, ¶ 2.8 APPROPRIATE TIME FRAME AND ANALYSIS YEARS, at 15.

218. EPA explained in the rulemaking to revise the hot-spot rule that the purpose of the requirement to analyze the impact of Project emissions during the year of highest emissions is to ensure that the NAAQS will continue to be attained as background emissions grow over time:

> EPA intends that the hot-spot analysis compare concentrations with and without the project based on modeling conditions in the analysis year. The hotspot analysis is intended to assess possible violations due to the project *in combination with changes in background levels over time.*

71 Fed. Reg. 12,497 (Mar. 10, 2006) (emphasis added).

219. FHWA concluded in the Air Quality Technical Report released with the FINAL EIS that:

> the evidence is clear—the overall PM10 emission inventory is rising over time due to increases in almost all source types. Therefore, it is reasonable to conclude that the year 2035 is the year of peak emissions to model for the PM10 hotspot analysis.

Final EIS, Vol. II, Attach. J, Air Quality Technical Report, § 4.4.2, at 35.

220. Notwithstanding FHWA's conclusion that both Project emissions and background emissions would be greatest in 2035, FHWA made the Conformity Determination based upon adding Project emissions to historical monitored background concentrations from 2014.

221. The Sierra Club objected twice to the use of historical air quality for determining the "design value" for the I-70 Project because use of historic PM10 data fails to account for future growth in the Project area. *See* ROD, Attach. E, Sierra Club Comments, at 99; ROD, Attach. F, Sierra Club Comments, at 265.

222. The Sierra Club submitted the results of air quality modeling performed by the Colorado Department of Public Health and Environment ("CDPHE") for the years 2001 – 2030 to support Colorado's request that EPA redesignate the Denver metropolitan area from nonattainment to attainment for PM10 under § 107(d) of the Clean Air Act, 42 U.S.C. § 7407(d).

223. EPA required CDPHE to model future PM10 emissions to demonstrate that once in attainment, Colorado would maintain the PM10 NAAQS for at least 20 years.

224. Modeling results for the Project area reported in the Denver Metropolitan Area PM10 Maintenance Plan shows that background air quality in the area of the I-70/I-25 interchange would steadily increase to near 140 µg/m3 by 2025-2030 without an expanded I-70. Colorado State Implementation Plan for PM10: Revised Technical Support Document (Sept. 2005), Figs. 5.5, 5.6, at 47-48 (excerpts are attached as Exhibit 16).

225. The Sierra Club requested that FHWA use the PM10 Maintenance Plan modeling results to calculate the future background concentration for PM10, because the modeling demonstrates that historic data fails to account for the future growth in the Project area reflected in the PM10 Maintenance Plan modeling results.

226. Combining the modeled future background results from the PM10 Maintenance Plan (nearly 140 µg/m3) with modeled future emissions from the Project (41 µg/µm3), the total expected emissions in the Project area will exceed the PM10 NAAQS of 154.9 $\mu g/m^3$.

227. FHWA explained that it failed to use the modeling results of future background PM10 concentrations from the PM10 Maintenance Plan because the modeling was not performed using a photochemical model described in EPA's Hot-spot Guidance, § 8.3.3.

228. FHWA did not perform modeling using the EPA recommended photochemical model to calculate the future background PM10 concentrations, as required by 40 C.F.R. § 93.123(c)(1).

229. NEPA requires that where "information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement." 40 C.F.R. 1502.22(a).

230. FHWA's failure to use the future modeled concentrations that EPA approved as suitable for approving Colorado's CAA Maintenance Plan for the PM10 hot-spot analysis, or to conduct photochemical analysis to determine the future background concentrations of PM10, fails to account for future growth in the Project area, and violates § 93.123(c)(1) of EPA's Hot-spot rule by not determining future background air quality. *See* 40 C.F.R. § 95.123(c)(1).

231. FHWA's hot-spot analysis fails to provide the evidence required by 40 C.F.R. § 93.123(c)(1) of EPA's Hot-spot rule to lawfully "demonstrate and assure" as required by 42 U.S.C. §§ 7506(c)(1)(B)(i) and 7506(c)(4)(B), that emissions from the I-70 Project "will not cause or contribute to any new violation" of the PM10 NAAQS during the horizon year when "[a] new NAAQS violation or worsening of an existing violation would most likely occur due to the cumulative impacts of the project and background concentrations in the project area."

Second CAA Claim:
FAILURE TO USE HIGHEST MONITORED BACKGROUND VALUE AS REQUIRED BY 2010 PM HOT-SPOT GUIDANCE

232. In the alternative, if FHWA is not required to use future background data in calculating the design value for the I-70 Project and the use of historical data are permitted, FHWA erred in determining the historic background PM10 concentration to

be added to the concentrations from the Project to determine the "design value" for comparison with the NAAQS.

233. EPA's PM10 2010 Hot-spot Guidance specifies that to determine the PM10 background concentration using ambient monitoring data, a transportation agency must use "the highest 24-hour PM10 background concentration" recorded over "the past three years of monitoring data." 2010 Hot-spot Guidance, § 9.3.4.

234. EPA advised FHWA that the "last three years of monitoring data" were from 2012-2014. The highest value from those years was 144 μg/m^3. *See* "Potential Error Found in Background Concentration Used in 2035 PM10 Hot-spot Conformity Analysis: I-70 East Project Final EIS," EPA email at ROD Attachment B, Updates to Agency Consultation, at 11-12.

235. In the Hot-spot analysis used for the Conformity Determination, FHWA relied on a procedure for calculating PM10 background values that used the third-highest background value, which was 113 μg/m3.

236. The amended procedure was included in 2015 amendments to EPA's Hot-spot Guidance which has been challenged by a Petition for Review filed in the U.S. Court of Appeals for the District of Columbia Circuit, No. 16-1097, by Petitioners Sierra Club and Elyria and Swansea Neighborhood Association in this case.

237. FHWA's reliance on the 2015 amended procedure to calculate background value is unlawful for the same reasons that EPA's amended procedure is unlawful.

238. EPA's 2015 amendments to the 2010 Hot-spot Guidance seek to amend procedures initially adopted after notice and comment, but without using notice and comment procedures required by the APA, are arbitrary and capricious because the amended procedure is not supported by evidence in the Agency record, and are inconsistent with law because the amended procedure allows emissions that can cause or contribute to violations of the NAAQS. The 2010 Hot-spot Guidance has not been lawfully amended, and remains in force and effect until lawfully amended using APA rulemaking procedures.

239. The D.C. Circuit Court of Appeals has exclusive jurisdiction to review final EPA actions of national applicability. 42 U.S.C. 7607(b)(1). Petitioners incorporate by reference the addendum to the opening brief from the D.C. Circuit case, attached as Exhibit 17 to this Petition, to inform this Court of issues presented for review. Oral argument in that case is scheduled for September 19, 2017.

240. FHWA is required by EPA's 2010 Hot-spot Guidance, which has the force of law for the reasons described in Petitioners' brief filed in the D.C. Circuit, to add Project concentrations to the highest monitored background value recorded over the latest three years of monitoring, to wit 144 µg/m3.

241. Project emissions (41.1 $\mu g/m^3$) when added to monitored background (144 $\mu g/m^3$) equal 185 $\mu g/m^3$, demonstrating that Project emissions will violate the PM10 NAAQS (154.9 $\mu g/m^3$).

Third CAA Claim:

FHWA'S PROJECT DESIGN VALUE UNLAWFULLY OMITS UP TO EIGHT DAYS OF PM10 CONCENTRATIONS THAT MAY VIOLATE THE NAAQS FOR PM10

242. The "design value" for a project is used to compare the impact of future Project emissions on air quality with the NAAQS. Hot-spot Guidance, Section 9.

243. The "design value" must be determined by adding future concentrations from the project to background concentrations. 40 C.F.R. § 93.123(c)(1).

244. EPA's PM10 EPA's 2010 Hot-spot Guidance specified that the "design value" for a transportation project would be calculated by adding: (1) the highest 24-hour PM10 background concentration (recorded over the past three years of monitoring data) to (2) the sixth highest modeled Project 24-hour concentrations. 2010 Hot-spot Guidance, § 9.3.4.

245. To make the Conformity Determination, FHWA relied upon EPA's amended 2015 Hot-spot Guidance that allows the fourth highest 24-hour background concentration (based on three years of monitoring data) to be added to the sixth highest modeled Project 24-hour concentration.

246. The 2015 Hot spot Guidance procedure allows days when Project emissions could cause NAAQS violations. By adding the fourth highest background concentration to the sixth highest Project concentration, FHWA ignores the combined concentrations that can occur when lower background levels are combined with highest 1-5 days of Project emissions, and the combined concentrations that can occur when the 7^{th} or 8^{th} highest Project emission day is combined with days 1-3 of background emissions.

247. Up to eight of the highest combined pollution days resulting from background and Project emissions can exceed the level of the NAAQS (154.9 $\mu g/m^3$).

248. The NAAQS for PM10 allows three days that exceed the level of the NAAQS during any three consecutive years. 40 C.F.R. § 50.6, Appendix K.

249. The modeled concentrations for seven of the eight highest Project concentration days are not disclosed. Only the concentration on the sixth highest day is disclosed. Without disclosing the results for the other seven highest emission days, FHWA has not disclosed whether the combined totals of Project emission and background will exceed the level of the NAAQS on more than three days during any three-year period.

250. In comments on the Final EIS, Petitioners requested the modeling results for all highest emissions days, but that request was denied.

251. The statutory test for "demonstrating and assuring conformity in the case of transportation … projects," 42 U.S.C. § 7506(c)(1)(B) and (c)(4)(B), requires that modeling results for more than the 6^{th} highest emission day must be disclosed so that a determination could be made whether other likely combinations of emissions and background would exceed the NAAQS on more days than is allowed by the NAAQS.

252. FHWA has failed to disclose modeling results relevant to demonstrating whether this project "will not cause or contribute to any new violation" of the PM10 NAAQS.

253. Without disclosing modeling results that could demonstrate that Project emissions will violate the NAAQS, FHWA has not provided the facts needed to demonstrate and

assure that the Project "will not cause or contribute to any new violation of" the NAAQS for PM10 as required by the Act.

Fourth CAA Claim:
CONFORMITY DETERMINATION UNLAWFULLY RELIES ON UNDISCLOSED MITIGATION MEASURES THAT ARE UNENFORCEABLE

254. The modeled contribution of Project emissions to PM10 concentrations decreased from 57 µg/m3 in the Final EIS to 41.136 µg/m3 in the Air Quality Conformity Report published with the ROD. *Compare* Final EIS, Vol. II, Attach. J, Table 20, at 78 *with* ROD, Attach. C-7, Table 2, at 10.

255. Total concentrations when project emissions are added to background are just 0.864 $\mu g/m^3$ below the level of the PM10 NAAQS.

256. In a separate report, FHWA identified three changes in factors that are used in performing the hot-spot analysis that changed between the hot-spot analysis in the Air quality Technical Report, Final EIS Attachment J, and the Air Quality Conformity Report released for comment in December 2016:

- Minor adjustments and refinements to the design of the Preferred Alternative resulting from public and agency comments on the Final EIS and continued evaluation of the Build Alternatives
- Release of the 2040 Focus travel demand model by the Denver Regional Council of Governments (DRCOG) and subsequent update of the Regional Transportation Plan (RTP) planning horizon year and year of peak emissions from 2035 to 2040
- A change to locations modeled in the PM10 analysis, focusing on maximum receptor areas for PM10, as identified in the Final EIS.

ROD, Attach. C-6, § 2, at 2.

257. FHWA provided no explanation of how the changes in these factors contributed to the large (28%) reduction in modeled Project emissions between the two hot-spot analyses.

258. Ten days prior to the close of the public comment period for the Air Quality Conformity Report, Petitioners requested relevant data for each factor, and an explanation regarding how the factors cited in the AQ NEPA Comparison contributed to the large reduction of emissions from the Project.

259. Changes in the emission factors for road dust were not identified as having changed in the documents released for comments. With respect to road dust emissions, the Air Quality NEPA Comparison, at 6, stated:

> To estimate road dust and sanding emissions for this analysis, emissions factors from the most recent PM10 conformity modeling were used accounting for dust mitigation controls committed to by CDOT in consultation with APCD.

ROD, Attach. C-6, §3.2, at 6.

260. Petitioners suspected that a large reduction in Project emissions could not be achieved without changing the emissions of road dust since FHWA revealed for the first time in the FEIS that road dust emissions are 87% of total Project emissions, and that emissions of road dust increase as traffic increases.

261. Petitioners requested any information regarding changes in the emission factors used to calculate road dust emissions, and documentation to establish the technical basis for any changes and the enforceability of any "dust mitigation controls committed to by CDOT":

> The most recent conformity modeling was in March 2016, which would have occurred after the release of the FEIS AQ Report. CDOT must disclose whether the emissions factors for road dust and sanding were different from the emissions factors used in the FEIS AQ Report, what the differences were, what data were relied upon to conclude that the emissions factors used in the modeling for the FEIS AQ Report were no longer credible, and to what extent the magnitude of the change in total Project emissions is attributable to the use of different emissions factors.
> In addition, the dust mitigation controls committed to by CDOT are not described or cited by reference in the Report. These must be disclosed since they are relied upon for the conformity determination, but they are not presented. Controls must also be enforceable to qualify for emission reduction credit in a conformity determination. Documentation establishing the enforceability of controls is not provided.

Preliminary Comments on Hot-spot Emissions Analysis and Proposed Conformity Determination: Request for Documentation and Data (January 5, 2017), ROD, Attach. F, at 62-71.

262. In response to this request for data and documents relevant to the Conformity Determination, a document was provided showing in hand written notes that the modeling analysis assumed that road dust would be reduced by 83%.

263. Previous documents stated that emission factors for road dust emissions were based on the 30% reduction in the application of street sand for most of the Denver Metro area, 72% reduction in the "sweep box" surrounding the Denver central business district, and 54% reduction by CDOT on portions of I-25 required by the Colorado Air Quality Control Commission Regulation 16. (Available at: https://www.colorado.gov/pacific/sites/default/files/5-CCR-1001-18.pdf.)

264. No information or documentation was provided that responded to the request for information showing a) any change in road dust emission factors used for the

Conformity Determination compared to the hot-spot analysis for the FINAL EIS, b) the technical basis for the effectiveness of control measures to establish that an 83% reduction in emissions has been demonstrated and is feasible, or c) any written commitments to dust mitigation measures that had been made by CDOT or how such commitments would be enforced.

265. EPA's Conformity Rule allows emission reductions from mitigation measures to be credited when performing a hot-spot analysis *only* when the measures are enforceable obligations of the State Implementation Plan.

> PM10 … mitigation or control measures shall be assumed in the hot-spot analysis only where there are written commitments from the project sponsor and/or operator to implement such measures, as required by § 93.125(a).

40 C.F.R. § 93.123(c)(4).

> (a) Prior to determining that a transportation project is in conformity, … FHWA … must obtain from the project sponsor and/or operator written commitments to implement in the construction of the project and operation of the resulting facility or service any project-level mitigation or control measures which are identified as conditions for NEPA process completion with respect to local CO, PM10, or PM2.5 impacts. Before a conformity determination is made, written commitments must also be obtained for project-level mitigation or control measures which are … used in the project-level hot-spot analysis required by § 93.116.
>
> * * *
>
> (c) The implementation plan revision required in § 51.390 of this chapter shall provide that written commitments to mitigation measures must be obtained prior to a positive conformity determination, and that project sponsors must comply with such commitments

40. C.F.R. § 93.125(a), (c).

266. In the ROD FHWA acknowledged that the emission factors for road dust had changed, and reflected reduction targets of 60% by the City of Denver, and 75% by

CDOT on I-70's new managed lanes. Targeted reductions for road dust control on I-70's existing general purpose lanes were not identified.

267. The ROD did not identify, describe or provide references to any dust control mitigation measures that would be implemented to achieve the emissions reduction targets.

268. The enforceability of dust control measures requires, at a minimum, the description of the measures to be implemented and the criteria governing their application, including the technology to be deployed (alternatives to street sanding, sweeping or vacuuming), the effectiveness of the technology required to achieve the targeted reductions, the frequency of deployment required to prevent dust emissions from returning to levels that exceed the emission reduction targets, and any other parameters necessary to track implementation to assure that targeted reductions will be achieved.

269. Written commitments to implement dust mitigation control measures sufficient to achieve the emission factors (60% and 75% control on some lanes), used for modeling Project emissions were not disclosed to the public for comment, are not disclosed in the final Conformity Determination, and are not required to be implemented as a mitigation measure in the Final EIS, Chapter 9 Mitigation, or in the ROD.

270. Without written commitments to implement dust mitigation control measures sufficient to achieve the emission factor used to model Project emissions that are enforceable under the Colorado State Implementation Plan, FHWA may not lawfully

make a Conformity Determination by taking credit for reductions in road dust emissions beyond those required by the Colorado State Implementation Plan approved by EPA pursuant to 42 U.S.C. § 7410.

271. Colorado Air Quality Control Commission Regulation 16 establishes the enforceable requirements for the control of road dust in the federally approved Colorado State Implementation Plan. Available at: https://www.colorado.gov/pacific/sites/default/files/5-CCR-1001-18.pdf.

Fifth CAA Claim:
CONFORMITY DETERMINATION IS ARBITRARY AND CAPRICIOUS BY FAILING TO ACCOUNT FOR HALF OF TRUCK EMISSIONS AND FAILING TO DEMONSTRATE THAT PROJECT EMISSIONS WILL NOT VIOLATE THE PM10 NAAQS

272. EPA transportation conformity guidance states that in preparing a hot-spot analysis: "The project sponsor should use project-specific data for both emissions and air quality modeling whenever possible . . . . ." *See* 2015 EPA Hot-spot Guidance 3.3.7 at 22.

273. FHWA cited this provision in the Final EIS to affirm that a hot-spot analysis requires use of "information related directly to the corridor and/or proposed project." *See* Final EIS, Attach. J, Air Quality Technical Report, at 31.

274. Actual heavy duty vehicle counts reported by the CDOT on I-70 east of the mousetrap interchange with I-25 consistently show that heavy duty vehicles account for between 8 and 11% of daily trips.

275. The Final EIS Traffic Technical Report included localized traffic data for 2000 and 2011.

276. In 2000 average daily traffic (ADT) counts on I-70 conducted by the CDOT showed "approximately 9 - 11% truck traffic" in the Project area. *See* Final EIS Attach. E, Traffic Technical Report Appendix D, EIS Safety Evaluation March 2004, at 2.

277. In 2011 truck traffic in the Project area was "approximately 9 to 11 percent." See Final EIS Traffic Technical Report, Attach. E, Appendix D, Safety Evaluation Addendum I-70 Corridor Plan January 2013, at A-1.

278. A detailed analysis of 2012 traffic count and classification data found that total bi-directional truck share exceeded 10% at some locations, but was above 8% at all but one segment. Supplemental Draft EIS, Attach. E Traffic Technical Report, ¶ 3.3.4, Heavy Vehicles.

279. In a comment on the Final EIS, the Sierra Club submitted CDOT's ADT traffic counts for 2012:

(truck share shown in parenthesis)[5]:

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%)

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[5] Colorado Department of Transportation, Traffic Data Explorer, 2013. Available online at: http://dtdapps.coloradodot.info/Otis/TrafficData (last accessed October 30, 2013).

See SIERRA CLUB COMMENT ON THE FINAL EIS, ROD, Attach. E at 108-109.

280. The 2012 ADT data provided by Sierra Club showed, consistent with CDOT's 2000 and 2011 CDOT localized traffic counts that the 2012 ADT truck share of traffic in the Project area was between 9.1 and 10.9%.

281. In 2015, CDOT conducted a truck study on I-70 to count truck traffic in the Project area. The share of heavy duty truck traffic on I-70 east of the 1-25 interchange (travelling in both directions) was 8% of the total traffic counted for that day.[6] *See* Final EIS Attach. E, Appendix H, "Heavy Vehicle Traffic Conditions on I-70," Fig. 2, at 364.

282. In 2016, traffic data currently available on CDOT's website shows ADT was 169,000, and the truck share was 9.1% in the area most impacted by emissions from the Project (on I-70 east of the I-25 interchange).[7]

283. CDOT's ADT data website shows that in even in 2040, truck share on I-70 east of the I-25 interchange is expected to be 9.1% of the total traffic volume.[8]

284. Actual counts of vehicles on I-70 for the last 17 years in the record demonstrate that the percentage of trucks in the Project area is consistently 8% or higher.

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[6] Westbound I-70 East of Washington Street there were 6867 heavy trucks, eastbound, there were 7276 heavy trucks for a total of 14,143 heavy trucks. Westbound I-70 East of Washington Street there were 80,448 light duty vehicles, eastbound, there were 82,841 light duty vehicles for a total of 163,269 light duty vehicles. The total number of heavy trucks was 14,143 out of 163, 269 total vehicles, or 8% of the total vehicle count.

[7] http://dtdapps.coloradodot.info/otis/trafficdata#ui/1/1/0/criteria/070A/0/449.589/true/true/, last accessed July 8, 2017

[8] http://dtdapps.coloradodot.info/otis/trafficdata#ui/1/1/0/criteria/070A/0/449.589/true/true/ last accessed July 8, 2017.

285. For the hot-spot emissions analysis FHWA did not use actual truck counts in the Project area to determine the contribution of heavy duty vehicle emissions to Project emissions.

286. FHWA used heavy duty vehicle data based on the regional truck share of all vehicle trips in the metro area which was 5.8% - 5.9% of total traffic volume. *See* Final EIS Attach. J, Air Quality Technical Report, Table 9 at 50.

287. During the preparation of comments, Counsel for the Sierra Club requested information regarding the source of the vehicle mix data reported in Table 9 of the Air Quality Technical Report. Vanessa Henderson, the designated representative of CDOT with authority to provide information regarding the air quality modeling, responded that FHWA used regional, not local traffic count information: "The VMT mix reported in Table 9 is composite data from the 9 county ozone nonattainment area." *See* Sierra Club Comment on the Final EIS, ROD Attach. E, at 107-108.

288. Sierra Club objected that truck shares counted in the Project area, ranging between 9-11%, had not been used to estimate Project emissions for the hot-spot analysis.

289. In addition, the traffic modeling performed by CDOT for the Final EIS shows that the Project will result in increased truck trips in the segment between I-25 and Brighton Boulevard compared to the no-build option. See AQ Report, Final EIS Attach. J, Fig. 3, at 16.

290. These additional trips resulting from the Project are also not represented in the regional VMT [vehicle miles traveled] mix used to calculate emissions. Together, the actual truck use on this segment of I-70 reported by CDOT combined with the additional truck use when the Project is built means that only half of future truck emissions are accounted for in the hot-spot analysis. *See* Sierra Club Comment on the Final EIS, ROD Attach. E, at 109.

291. In response to comments about "air quality and truck emissions," FHWA stated that: "Although the total number of trucks is expected to increase significantly, in most cases the number of light duty vehicles is increasing at an even faster rate. Thus, in 2040, trucks will make up a lower total percent of volume than in 2010." ROD at 115.

292. For the hot spot analysis, FHWA unlawfully omitted nearly half of truck emissions by not using available data regarding the percentage of trucks making up the total traffic volume in the Project area.

293. FHWA arbitrarily relied on regional truck data "not related directly to the corridor and/or proposed project." FHWA's failure to rely on project specific information related directly to the proposed project violates EPA's Hot-spot guidance.

294. Regional vehicle trip data show that the truck and bus share of all vehicle trips in the Metro area (5.8%) is approximately half of the share of reported truck and bus trips on I-70 (9.3% to 10.9%).

295. Current regional vehicle trip data are not an accurate predictor of current truck and bus vehicle trips on I-70 when localized vehicle trip data is available on CDOT's

website. Further, ADT data for 2040 is available on CDOT's website and shows that, like in 2000, 2011, 2012, and 2016, the truck share in the Project area is expected to be 9.1%, nearly twice the truck share used by FHWA in the hot-spot analysis.

296. It is arbitrary and capricious to calculate future PM10 emissions by assuming that future trips by trucks and buses will only be half of the share of observed actual vehicle trips.

297. This assumption is contradicted by data in the record, and FHWA did not dispute Sierra Club's comment that localized truck share was twice the reported regional truck traffic share.

298. EPA's Hot-spot Guidance requires that: "The PM10 hot-spot analysis should include sufficient documentation to support the conclusion that a proposed project meets conformity-rule requirements per 40 C.F.R. 93.116 and 93.123. 2015 Hot-spot Guidance § 3.10 at 25.

299. Modeling results used to determine vehicle emissions on I-70 in the Conformity Determination do not include actual truck counts which are twice as high as truck counts based on regional truck data. The Sierra Club in comments on the Draft Air Quality Conformity Determination requested that FHWA provide documentation to explain how changes made in the air quality analysis between the Final EIS and the Conformity Determination, including changes in the model used to calculate vehicle emissions, fleet mix data, and the effect of changing the analysis year from 2035 to 2040 (when traffic and emissions were expected to increase) could result in a 34% reduction in PM10

emissions resulting from the Project; FHWA failed to do so. Sierra Club Preliminary Comments on the Hot Spot-Analysis and Proposed Conformity Determination, ROD Attachment F, at 66-68.

300. Modeling of PM10 emissions emitted from the Project performed for the Conformity Determination predicts that the Project will add 41.136 $\mu g/m^3$ to background concentrations of PM10 at the location where Project emissions are expected to be the greatest. *See* ROD, Attach. C-7, Air Quality Technical Report, at 10.

301. When Project emissions are added to background concentrations, the total is expected to be 154.136 $\mu g/m^3$, or 0.836 $\mu g/m^3$ less than a violation of the NAAQS for PM10. *See* ROD, Attach. C-7, Air Quality Technical Report, at 10.

302. FHWA has failed to provide documentation required under 2015 Hot-spot Guidance § 3.10 to support the conclusion that the I-70 Project meets the transportation conformity requirements of 40 C.F.R. 93.116 and 93.123. 2015 Hot-spot Guidance § 3.10 at 25.

Sixth Cause of Action:
HOT-SPOT ANALYSIS FAILS TO DEMONSTRATE PM10 AND CO CONCENTRATIONS WILL NOT VIOLATE NAAQS WHERE TRAFFIC TUNNEL EMISSIONS WILL EXPOSE CHILDREN ON PLAYGROUND

303. The Preferred Alternative includes an 800’ cover over the lowered portion of I-70 between Columbine and Clayton Streets. *See* ROD, Fig. 7 at 16.

304. The covered portion will enclose five lanes of traffic in each direction with space for an additional future lane, for a total of 12 lanes. Final EIS, Vol. I, Chapter 3, Exhibit 3-10 at 3-15.

305. The cover design includes athletic fields near the western edge of the cover where emissions accumulated from traffic traveling 800 feet under the cover will be released into the ambient air. *Id.*

306. The playground for Swansea Elementary School is located on the cover at the north-east edge of the athletic fields. *Id.*

307. The athletic fields are separated from the western edge of the cover by a two-lanes of traffic (Columbine Street) and some vegetation. *Id.*

308. The cover design includes play areas near the eastern edge of the cover where emissions accumulated from traffic traveling 800 feet under the cover will be released into the ambient air. *Id.*

309. The ROD stated:

> The cover is intended to be a shared, active space between the surrounding community and Swansea Elementary School. It is important to provide an active and safe space on the highway cover to maintain the status of the school as a community center in the neighborhood. The school playground is available to the community outside of school hours.

ROD at 17.

310. The Final EIS's discussion of the PM10 Hot Spot defined "sensitive receptors" as "locations in the vicinity of a roadway that are likely to contain large numbers of populations who are most susceptible to the adverse effects

of exposure to pollutants, such as hospitals, schools, child care facilities, and elder care facilities (EPA, 2013).” Final EIS Attach. J, Air Quality Technical Report, at 79.

311. The FINAL EIS Air Quality Technical Report also stated:

> Sensitive receptors within the study area consist of schools, homes, and recreational facilities within the Elyria and Swansea Neighborhood. Swansea Elementary School is the most notable concern for pollutant exposure because of its youth population, proximity to the freeway, and frequency of outdoor activities.

Final EIS Attach. J, Air Quality Technical Report, at 79.

312. Swansea Elementary School is open not only during normal school hours during the school year; the school offers an after-school program, and hosts summer school for eight hours per day in June and July. *See* http://scholarsunlimited.org/programs/partner-schools/, last accessed July 9, 2017.

a) PM10 Analysis:

313. The FINAL EIS Air Quality Technical Report stated that: “The PM10 hotspot analysis models the location at which PM10 emission concentrations are expected to be greatest,” including at I-70/I-25, and that Swansea Elementary School is “just north of I-70” and “within the I-70/I-25 PM10 hotspot study area, so modeled pollutant concentrations are available for 10 receptors located on the school property.” Final EIS Attach. J, Air Quality Technical Report at 79-80.

314. Receptors located at various points “on school property” at Swansea Elementary School, which is set back from I-70, are not representative of exposures to children

playing on the athletic fields and play areas adjacent to the exit from the traffic tunnel created by the cover. Final EIS Air Quality Technical Report, Fig. 19, at 81.

315. The Final EIS did not model pollutant concentrations of accumulated emissions from traffic traveling under the cover that will be released at the ends of the cover.

316. Emissions released into the ambient air from the western and eastern edges of the cover will contain higher concentrations of pollutants than emissions from vehicles travelling in open air.

317. Higher concentrations of pollutants emitted from the tunnel exits will cause higher concentrations in the ambient air at receptor locations adjacent to the tunnel exits than at Swansea Elementary School. ROD Fig. 7 at p. 16; Final EIS Air Quality Technical Report, Fig. 19, at 81.

318. Emissions from the eastern edge of the cover, near the play areas, are likely to be higher than emissions measured at receptor locations at Swansea Elementary School. ROD Fig. 7 at p. 16; Final EIS, Air Quality Technical Report, Fig. 19, at 81.

319. The Final EIS Air Quality Technical Report stated: "As shown in Table 21, all of the modeled concentrations at the school are well below the 24-hour PM10 standard of 150 $\mu g/m^3$." Final EIS, Attach. J, Air Quality Technical Report, at 80.

320. Predicted PM10 design value concentrations at Swansea Elementary were based on a background value of 89 $\mu g/m^3$, not the much higher 113 $\mu g/m^3$ used for the Conformity Determination. Final EIS Attachment J, Air Quality Technical Report Table 21, n.1, at 82. No analysis of PM10 emissions was performed to determine if

accumulated concentrations of PM emitted from under the cover would exceed the NAAQS at receptor locations near the edges of the cover where children will be at play atop the exits from the traffic tunnels.

b) Carbon Monoxide Analysis:

321. The 1-hour standard for carbon monoxide (CO) is 35 ppm. 40 C.F.R. § 50.8; The 8-hour standard for CO is 9 ppm. 40 C.F.R. § 50.8.

322. FHWA performed no analysis of potential exposure to CO concentrations released from the traffic tunnel exits.

323. FHWA stated that because Swansea Elementary School is located outside "the carbon monoxide hotspot study area," "it is reasonable to conclude that the carbon monoxide emissions at Swansea Elementary School also are below the NAAQS limit" for CO. Final EIS Attach. J, Air Quality Technical Report, at 72-73.

324. FHWA analyzed CO emissions *within* the covered tunnel, but did not analyze CO concentrations emitted from either end of the highway cover. Final EIS, Attach. J, Air Quality Technical Report, at 71-74.

325. The Final EIS Air Quality Technical Report stated that the analysis of CO inside the tunnels was conducted: "to evaluate the need for a ventilation system based on the carbon monoxide levels that motorists and/or workers may be exposed to under conditions of slowed or stopped traffic." Final EIS, Attach. J, Air Quality Technical Report, at 73.

326. The Final EIS Air Quality Technical Report stated that this analysis of the tunnel ventilation system, the I-70 East Partial Cover Lowered Highway, Denver, Colorado—Covered and Depressed Sections Ventilated and Fire Life Safety Report (Atkins, February 2013) ("2013 Atkins Report") was "included as Appendix E of the FINAL EIS." Final EIS, Attach. J, Air Quality Technical Report, at 73.

327. None of the Appendices published with the FINAL EIS Air Quality Technical Report include the 2013 Atkins Report; the Atkins report was not released to the public with the Final EIS. Final EIS, Attach. J, Air Quality Technical Report List of Appendices, at iv.

328. The Final EIS Air Quality Technical Report stated that a ventilation system would be needed during congested traffic conditions to protect motorists under the cover from exposure to dangerous concentrations of CO, nitrogen oxide (NO) and nitrogen dioxide:

> [T]here would be a need for a ventilation system based on the nitrogen dioxide concentrations within 27 minutes of stand-still conditions in the covered section. Carbon monoxide concentrations would warrant a ventilation system within 40 minutes of stopped traffic and nitrogen monoxide concentrations within 60 minutes. …In both cases, the time to reach the exposure limit is relatively short and would warrant the installation of a ventilation system . . . .

Final EIS Air Quality Technical Report, at 73-74.

329. The Air Quality Technical Report claimed: "[i]t would be a rare event to have full stand-still conditions for 40 minutes—or even for 27 minutes—within the total length of covered highway called for in the Partial Cover Lowered Alternative." Final EIS Air Quality Technical Report, at 73-74.

330. FHWA provided no evidence for estimating the frequency of expected backups on I-70 near the cover.

331. In response to the FINAL EIS Air Quality Technical Report, Sierra Club objected that no analysis had been performed that accounted for the unique conditions at the traffic tunnel exits to estimate the impact that accumulated emissions trapped under the cover would have on ambient air quality. *See* Sierra Club Comments on the Final EIS, ROD, Attach. E, at 109.

332. In response to comments, FHWA stated that "analysis showed that all of the areas around Swansea Elementary School and the cover were at or below the NAAQS for PM10." ROD Section 8, Comment AQ6, citing Table 2, Air Quality Conformity Report, at 114.

333. FHWA offered no explanation for whether or how accumulated concentrations of PM10 or CO from traffic were estimated when released from the traffic tunnel exits into the ambient air.

334. FHWA modelled emissions from the cover using an application of an air quality model called OPEN PIT: "Depressed sections of the roadway were modeled using AERMOD's OPENPIT source type. Final EIS at 5.10-20.

335. AERMOD guidance regarding the applications of OPENPIT indicates that this application is not authorized for modeling emissions from enclosed traffic tunnels, but from "open, rectangular pits": "OPENPIT source algorithm can be used to model particulate or gaseous emissions from open pits, such as surface coal mines and rock

quarries." User's Guide for the AMS/EPA Regulatory Model (AERMOD) at 3-80, 3-84. *See* https://www3.epa.gov/ttn/scram/models/aermod/aermod_userguide.pdf.

336. FHWA stated:

> With regard to air quality near the openings of the covered highway section, studies have shown that pollutant concentrations dissipate rapidly with distance from the tunnel openings. See the Air Quality Technical Report, Attachment J of the Final EIS, for more information.

ROD Section 8, Comment AQ6, at 114.

337. FHWA provided no support in the record for this statement.

338. Three articles cited as references in Attachment J of the Final EIS discussed the dissipation of pollutants with increasing distance from "roadways," which are open to the air, as opposed to concentrated pollutants emitted from traffic tunnels. *See* Air Resources Board of California Environmental Protection Agency (2012) ("2012 CARB Study"); Status of research on potential mitigation concepts to reduce exposure to nearby traffic pollution, Sacramento, CA: Authors; Win[n]er, Arthur (2004); The State of the Region Report, Air Quality in Southern California—Time for a Paradigm Shift, Los Angeles, CA: University of California at Los Angeles (UCLA); Source: Abstract, Zhu, Y., W.C. Hinds, S. Kim, S. Shen, and C. Sioutas. (2002). Study of Ultrafine Particles near a Major Highway with Heavy-Duty Diesel Traffic. Atmospheric Environment 36 (2002) 4323–4335.

339. The most recent study referenced in Attachment J of the FINAL EIS, the 2012 CARB Study, states that research about the emissions of pollutants from tunnels is "limited and variable." 2012 CARB study at 4.

340. Studies of the emissions of air pollutants from highway tunnels not referenced by the FHWA conclude that when air pollutants emitted by vehicles within the tunnel are vented into the atmosphere, "this has the potential to lead to localized degraded air quality and the potential for exceedance of national [air quality]." *See* Ian Longley, *et al.,* "Stocktake of Air Quality in and around State Highway Tunnels," New Zealand Transport Agency, April 2010 ("2010 New Zealand Study"), at 13. The New Zealand study found that: "the extent of the affected zone is typically …100 – 200 meters [328-656 feet]."

341. In addition, a 2015 study by Brugge, *et al*, found that: "[E]levated air pollution levels have been measured in highway tunnels and near vents/exits to decked areas, leading to potentially higher exposures for commuters and people living near vents/ exits." *See* Doug Brugge, *et al.,* "Developing Community-Level Policy and Practice to Reduce Traffic-Related Air Pollution Exposure," Environmental Justice, Vol. 8, No. 3 (2015), at 99-100.

342. FHWA provided no research to support the conclusion that air pollution dissipates rapidly from tunnels, and all of the studies cited by FHWA disclosed evidence that air pollution does not "dissipate rapidly with distance" even from open roadways. The 2012 CARB article cited by FHWA summarizes studies reporting the dispersion of highway

emissions into the open air showing that pollutant concentrations remains high "farther from the roadway," and that elevated levels of pollutants can occur as far as 1870 feet from the highway:

> More recent studies have shown a somewhat longer plume of increased pollutant concentrations farther from the roadway. Using data collected mostly during the day and near roadways, a meta-analysis of many studies found that for almost all pollutants, elevated levels of pollutants caused by the increased contributions from roadways returns to background levels at 160 - 570 meters [525 – 1870 feet]; Karner et al., 2010). The range of distances needed to reach background is usually a result of local meteorological conditions, which can vary significantly; however, **a more constant observation is a steep concentration gradient observed closest to the roadway, within 500 ft, with a more gradual and extended decline at further distances.** Another meta-analysis found that the "spatial extent of impact" of motor vehicles can extend up to 400 m [1312 feet] for black carbon and particles and 500 m [1640 feet] for nitrogen dioxide (NO2; Zhou and Levy 2007). Levels of traffic pollutants near roadways vary due to many factors, including traffic type and density, wind direction and speed, local and roadway topography, and time of day and season.

Id., (citations omitted.)

343. The athletic fields and playgrounds on the cover are within 50 meters of the tunnel exits. ROD, Fig. 7, at p. 16.

344. Further, one of the articles cited by FHWA for the proposition that air pollution "dissipates rapidly" with distance from highway tunnels specifically recommended against locating roadways near sensitive populations like kids who attend school within 650 feet of a freeway because of health effect observed in subjects…attending school very close to major roadways vs. "very close to major roadways vs those spending their time well away from major

arterials. *See* The State of the Region Report, "Air Quality in Southern California—Time for a Paradigm Shift," Los Angeles, CA: University of California at Los Angeles (UCLA), at 87, citing Winner, Arthur, 2004.

345. The few studies cited by FHWA contradict FHWA's conclusion that: "With regard to air quality near the openings of the covered highway section, studies have shown that pollutant concentrations dissipate rapidly with distance from the tunnel openings."

346. In comments on the Draft Air Quality Conformity Determination, Sierra Club objected that the modeling analysis for the Conformity Determination assumes that:

> half the emissions emitted under the cover will be released into the ambient air from each end of the cover… [t]his assumption is not documented by any relevant research. This assumption is critical because if all of the emissions trapped and concentrated under the eight block long cover are released from one end, the resulting concentrations will be double those assumed for the modeling analysis, and will exceed the level of the NAAQS at that location.
>
> [The] failure to account for concentrations in the ambient air that will result when wind and traffic push the pollution out one end of the cover is a fundamental flaw in the analysis.

Sierra Club Partial Comments on Hot-spot Emissions Analysis and Proposed Conformity Determination, ROD, Attach. E, at 274-275.

347. The Air Quality Technical Report stated that "to clear the air" inside the tunnel "and keep it safe for people inside," FHWA would rely on a ventilation system inside the tunnel.

348. Details of the tunnel's ventilation system were not released to the public as FHWA claimed. Final EIS, Attach. J, Air Quality Technical Report, at 73.

349. There was no ventilation study attached to the Final EIS, or to the Draft Air Quality Conformity Determination, or to the Final Air Quality Conformity Determination released with the ROD, so the public had no detailed information about the ventilation system, and no opportunity to comment on its likely effects.

350. A diligent search online located a 2015 Atkins report regarding the ventilation system that is not in the EIS record. *See* I-70 Project, Denver, CO Partial Covered Lowered Alternative Ventilation and Fire Life Safety Report (Atkins Ventilation and Fire Life Safety Report) (Sept. 2015) ("2015 Atkins Report").[9]

351. The 2015 Atkins Report described the tunnel ventilation system in detail, and stated that to ventilate the westbound lanes, there would be "13 jet fans located at the east portal housed in a fan niche just east of the Clayton [Street] Bridge….as close as possible to the East (entry portal).." To ventilate the east bound lanes, the ventilation system would consist of: "12 jet fans …. housed in a…niche situated just west of the Columbine Street bridge . . . . ." 2015 Atkins Report at 35-36.

352. The ventilation system does not filter emissions from the tunnel; the design criteria for the ventilation system states: "The primary design requirement is that the

[9] Available at https://codot.gov/content/projects/I-70-East-Addendum-3-June-2016/Schedule%2029%20Reference%20Documents/Section%2012%20-%20Cover%20MEP%20System/29.10.12.02%20Ventilation%20and%20Fire%20Life%20Safety%20Report.pdf)

ventilation system generates the critical air velocity required to prevent backlayering of smoke and hot gases." 2015 Atkins Report at 61.

353. The 2015 Atkins Report includes Table 3.4, which shows hourly emission rates of PM2.5, PM 10, and CO from both ends of the cover, but emissions were not converted into concentrations ($\mu g/m^3$ for PM, ppm for CO) for comparison with the applicable NAAQS. 2015 Atkins Report, Table 3.4, at 18.

354. Emissions of CO and PM10 are highest during rush hours, when children and adults are most likely to be using the athletic fields and play areas on the cover. 2015 Atkins Report, Appendix D, Table 3.4, at 18.

355. FHWA does not address whether using the emergency ventilation system jet fans to force emissions from the tunnel during periods when stalled traffic causes extremely elevated concentrations *inside* the tunnel would cause the release of PM or CO concentrations that violate the NAAQS, or pose a risk to children and adults exposed to the emissions from the emergency ventilation system. *See* ROD Chapter 8, Response to Comments (Comment AQ6), at 114.

356. FHWA's Conformity Determinations for both PM10 and CO unlawfully fail to demonstrate that Project emissions will not cause or contribute to violations of the NAAQS at the locations where children will be exposed to Project emissions released from the traffic tunnels.

357. Making a Conformity Determination without using appropriate scientific methods for determining the impact of pollutant concentrations emitted from traffic tunnel exits where children on playing fields will be exposed is arbitrary and capricious.

358. Making a Conformity Determination without credible, relevant evidence of concentrations at the locations where tunnel emissions will expose children on playing fields violates 42 U.S.C. § 7506(c)(1), the hot-spot conformity rules, and EPA's Hot-spot Guidance.

359. FHWA's failure to consider the effects on human health that are likely to be caused by exposure to highly elevated concentrations of pollutants blown from under the cover during times of peak traffic and peak emissions violates NEPA, and is not consistent with rational decision-making required under the APA.

Seventh CAA Claim:
OPPORTUNITY FOR COMMENT HAS NOT BEEN PROVIDED AS REQUIRED BY LAW

360. "[A]gencies making Conformity Determinations on transportation…projects are required to establish a proactive public involvement process which provides opportunity for public review and comment by, at a minimum, providing reasonable public access to technical and policy information considered by the agency at the beginning of the public comment period…." 40 C.F.R. § 93.105(e).

361. FHWA failed to comply with their obligation under 40 C.F.R. § 93.105(e) to provide for meaningful participation by: (1) not providing at the beginning of the comment period technical and policy information they relied on or notice of where and

how such information might be accessed; (2) not providing any information in response to some requests for technical and policy information relevant to the I-70 Conformity Determination, and (3) not providing data and information in a format and context usable by the general public.

362. Technical and policy information considered by the agency and highly relevant to the Conformity Determination was not made available to the public at the beginning of the public comment period as required by 40 C.F.R. § 93.105(e).

363. Information regarding the estimation of truck traffic and other data highly relevant to the Conformity Determination was made available to the public 8 days prior to the close of the announced 30 day period for public comments.

364. A Technical Memorandum, "Comparison of 2035 to updated 2040 DRCOG model volumes on I-70" was dated December 1, 2016, and an EPA email providing the correct the three highest days of monitored PM10 background concentrations were not released to the public until the "Update to the Traffic Technical Report" was released with the ROD on January 19, 2017, five days after the public comment period closed, and fourteen days after the Sierra Club requested this information.

365. In response to some requests, FHWA failed to provide any information at all. FHWA failed to disclose information highly relevant to the Conformity Determination, including the five highest concentrations of modeled Project emissions which are relevant to determining whether Project emissions will not violate the PM10 NAAQS.

366. This information is necessary to determine the magnitude of dust control mitigation measures that are necessary to ensure the Project will not violate the PM10 NAAQS and whether those measures are enforceable as required by law.

367. FHWA also failed to disclose updated traffic data useful to the public's ability to understand changed inputs to the air quality modeling, and the details of the ventilation system needed to understand how the emergency ventilation system to be installed in the traffic tunnels near the Swansea Elementary School playground may risk violating the NAAQS during peak traffic hours.

368. FHWA also failed to provide data and information in a format usable by the general public, instead providing "raw data" that even experts could not interpret.

369. FHWA failed to provide the 45-day comment period required under NEPA and requested by petitioners to allow time to understand the data released 8 days before the close of comments. 40 C.F. R. § 1502.9.

370. FHWA's Conformity Determination failed to "include sufficient documentation to support the conclusion that a proposed project meets conformity rule requirements per 40 C.F.R. 93,116 and 93.123;" or "include sufficient documentation to support the conclusion that a proposed project meets conformity rule requirements per 40 C.F.R. 93,116 and 93.123." 2015 Hot-spot Guidance, § 3.10 at 25.

371. FHWA's failure to provide information to the public in a usable format, either before the beginning of the comment period, or at all, and failure to respond to

significant comments violates FHWA's obligation under the APA to respond to significant comments.

372. Petitioners were prejudiced by FHWA's failure to: (1) disclose requested technical and policy information at all, (2) disclose technical and policy information relied upon by FHWA prior to the beginning of the comment period, (3) disclose requested technical and policy information in a format and context usable by the general public, and (4) to provide a

45-day public comment period violates FHWA's obligations to provide meaningful public involvement pursuant to 40 C.F.R. 93.105(e), the document and disclosure requirements of EPA's Hot-Spot Guidance section 3.10, and the comment period requirements of NEPA and the APA.

PRAYER FOR RELIEF

WHEREFORE, Petitioners Sierra Club, Elyria and Swansea Neighborhood Association, Chafee Park Neighborhood Association, and Colorado Latino Forum respectfully request that this Court:

A. Declare that Final Environmental Impact Statement is deficient for the reasons alleged, arbitrary and capricious and fails to comply with the National Environmental Policy Act;

B. Declare that the determination that the Project is in the best overall public interest is not based on consideration of all relevant statutory factors under the Federal-Aid Highway Act because FHWA failed to consider adverse health effects, adverse effects on standards to protect air quality, and mitigation to avoid or minimize those adverse effects, and is therefore arbitrary and capricious and inconsistent with law;

C. Declare that the Conformity Determination fails to demonstrate and assure that Project emissions will not cause or contribute to any new violation of the NAAQS for PM10 for the reasons alleged as required by the Clean Air Act, is arbitrary and capricious, not based on substantial evidence to support the facts required to make a Conformity Determination, and is inconsistent with law;

D. Declare that FHWA violated NEPA by issuing a ROD before issuing an EIS that complies with the Act;

E. Declare that FHWA violated FAHA, 23 U.S.C. § 109(h), by issuing a ROD before making a lawful determination that the I-70 Project is in the best overall public interest;

F. Declare that FHWA violated the CAA, 42 U.S.C. § 7506(c), by issuing the ROD before making a lawful Conformity Determination;

G. Vacate the ROD;

H. remand this matter to FHWA for further proceedings consistent with the Court's Order;

I. Order FHWA to consider available alternatives that restore and enhance the human environment;

J. Award Petitioners their reasonable fees, costs, expenses, and disbursements, including attorneys' fees associated with this litigation pursuant to 28 U.S.C.§ 2412 and any other applicable statutes; and

K. Grant such additional and further relief as the Court may deem just and appropriate.

Respectfully submitted,

Dated: July 10, 2017

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