Air Resources Board

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TO: Dennis Trujillo
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FROM: Cynthia Marvin, Chief
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DATE: September 1, 2016

SUBJECT: GREENHOUSE GAS REDUCTION FUND: HIGH SPEED RAIL REVISED EXPENDITURE RECORD FOR FISCAL YEAR 2015-16

Thank you for submitting the revised expenditure record (attached) on behalf of the California High-Speed Rail Authority (HSRA) on August 29, 2016, to satisfy the requirements of Senate Bill 1018 (Budget and Fiscal Review Committee, Chapter 39, Statutes of 2012) for expenditures from the Greenhouse Gas Reduction Fund (Fund). This revision reflects the actual FY 2015-16 proceeds generated from Cap-and-Trade auctions available to HSRA for this Program. We appreciate the iterative consultation process with HSRA staff on the development of this record to support expenditures from the Fund for High-Speed Rail.

This memorandum documents that Air Resources Board (ARB) staff concurred on September 1, 2016, that the attached record is consistent with the statutory requirements of Government Code Section 16428.9 and with ARB's expectations, as documented in the *Funding Guidelines for Agencies that Administer California Climate Investments.*

The High-Speed Rail Revised Expenditure Record for Fiscal Year 2015-16, along with this memorandum, will be published on the ARB Cap-and-Trade Auction Proceeds website at: www.arb.ca.gov/auctionproceeds.

If you have any questions concerning this memorandum, please contact me at (916) 324-0062 or via email at Cynthia.Marvin@arb.ca.gov.

Attachment

cc: See next page.

Greenhouse Gas Reduction Fund: Expenditure Record
Fiscal Year: 2015-2016

California High-Speed Rail Authority
California High-Speed Rail

Revised to Reflect $457.2 Million Appropriation

High-Speed Rail Authority prepared a preliminary expenditure record in April 2015 for the $600 million in High-Speed Rail funding based the Governor's proposed budget for Fiscal Year (FY) 2015-16. The actual amount of FY 2015-16 funds was contingent upon State proceeds generated from Cap-and-Trade auctions that occurred during FY 2015-16. This revised expenditure record reflects the actual FY 2015-16 funds available to High-Speed Rail Authority for High-Speed Rail of $457.2 million.

Authorizing legislation: Senate Bill 852 (Chapter 25, Statutes of 2014), Senate Bill 862 (Chapter 36, Statutes of 2014)

1. A description of each expenditure proposed to be made by the state agency pursuant to the appropriation.

Agency that will administer funding	▪ California High-Speed Rail Authority (Authority or HSRA)
Amount of proposed expenditure and appropriation reference	▪ Per SB 862 (Chapter 836, Statutes of 2014), 25% of the annual proceeds in the Greenhouse Gas Reduction Fund (GGRF) are continuously appropriated to HSRA for high-speed rail, beginning in FY 2015-16. ▪ The actual High-Speed Rail funds available for FY 2015-16 are $457.2 million.
Estimated amount of expenditures for State agency administrative costs	▪ The Authority does not propose using any GGRF funds for administrative costs.
If applicable, identify laws or regulations that govern how GGRF funds will be used.	▪ Assembly Bill (AB) 1532 (Pérez, Chapter 807, Statutes of 2012), SB 535 (de León, Chapter 830, Statutes of 2012), SB 1018 (Budget and Fiscal Review Committee, Chapter 39, Statutes of 2012), and SB 862 (Committee on Budget and Fiscal Review, Chapter 36, Statutes of 2014) provide the general framework for how the auction proceeds will be administered to further the purposes of AB 32.

☐ Continuation of existing Expenditure Record	▪ This fiscal year's appropriation will support a continuing program that will fund the same types of projects that have already been funded under an existing Expenditure Record.
☐ Project category	▪ Sustainable Communities and Clean Transportation o High-Speed Rail
☐ Type of projects that will be eligible for funding	▪ Phase 1 Blended System (which includes all of the IOS) planning, environmental review, design, right of way acquisition, repayment of any loans made or to be made the Authority to fund the project, and construction and other capital costs (such as environmental mitigation). By 2029, the Phase 1 Blended System, also referred to simply as Phase 1, will run from San Francisco to the Los Angeles basin, via the Central Valley. ▪ The appropriated GGRF funds could be used to leverage Federal funding on the IOS and will be combined with other funds (e.g., from the State's Proposition 1A (Prop 1A) bonds) for expenditure on components of the IOS and the Phase I Blended System.
☐ Intended recipients	▪ The Authority, to fund implementation of its project through contracts with public and private entities including but not limited to contractors, land owners, air districts, local governments and/or non-profit organizations.
☐ Process for selecting projects for funding	▪ Direct funding of defined State capital improvements. The Authority is currently implementing planning, design and construction of the high-speed rail system IOS and foundational elements of the Phase 1 Blended System. The Authority issues design-build and other service contracts periodically and as detailed on its website: http://www.hsr.ca.gov/About/Doing_Business_with_HSR/index.html Projects for funding are selected based on construction phasing for the Phase 1 Blended System.

2. A description of how a proposed expenditure will further the regulatory purposes of Division 25.5 (commencing with Section 38500) of the Health and Safety Code, including, but not limited to, the limit established under Part 3 (commencing with Section 38550) and other applicable requirements of law.

☐ How the expenditure is reflected in the three-year Investment Plan and the Scoping Plan	▪ AB 1532 (Pérez, Chapter 807, Statute of 2012) requires the development of a three-year Investment Plan which identifies priority investments that facilitate GHG reductions. This legislation also requires that GGRF moneys be appropriated in a manner that is consistent with the Investment Plan. The 2013 Investment Plan specifically recommends investments in rail modernization, including expanded transit, passenger rail, and high-speed rail service. Therefore, the high-speed rail expenditures covered by this record will be consistent with the three-year Investment Plan. ▪ High-speed rail expenditures will reduce greenhouse gas emissions (GHGs) and further the purposes of AB 32 when people shift from cars, planes and other more-GHG-emitting forms of transportation to high-speed rail and its Phase I Blended System components. Ultimately, the system will provide high-quality, high speed passenger rail service connecting California's major population centers. The 2013 Investment Plan,[1] 2008 AB 32 Scoping Plan,[2] and 2014 Scoping Plan Update[3] recommend investments in high-speed rail and rail modernization to help achieve AB 32 goals.

[1] "Cap-and-Trade Auction Proceeds Second Investment Plan: Fiscal Years 2016-17 through 2018-19"; https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/16-17-final-second-investment-planii.pdf

[2] Air Resources Board; AB 32 Scoping Plan; http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

[3] Air Resources Board; AB 32 Scoping Plan Update; http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

3. A description of how a proposed expenditure will contribute to achieving and maintaining greenhouse gas emission reductions pursuant to Division 25.5 (commencing with Section 38500) of the Health and Safety Code.

☐ Describe how expenditures will achieve GHG reductions or net GHG benefits

Reduce GHGs by Shifting from Cars and Planes to High-Speed Rail

- Initiation of high-speed rail service and implementation of Phase I Blended System elements will reduce GHGs by shifting passengers from fossil-fueled forms of transportation to electric rail service and to high-speed rail service powered by renewable energy.
  The Authority has forecast GHG reductions for the system in several environmental review documents[4] and in a 2013 report to the Legislature, "*Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels.*"[5] The report contains expected GHG reductions from operation of the IOS based on the 2012 Business Plan. The report also presents a range of activities under the high-speed rail program that directly reduce GHG emissions, as well as those parts of the program that will influence additional GHG reductions.
- The report details activities the Authority is undertaking that result in GHG emissions savings prior to 2020, including investment in Caltrain electrification, programmed to be funded by Prop1A, and bookend and connectivity projects, construction requirements, such as clean equipment and recycling, and mitigation such as the Voluntary Emissions Reduction Agreement.[6]
- The Authority updated the range of GHG reduction estimates for consistency with the 2014 Business Plan ridership forecasts.[7]
- The Authority is in the process of updating the Draft 2016 Business Plan, which may change the GHG reduction estimates.

Renewable Energy

- The Authority is committed to running high-speed rail service on 100% renewable energy. This approach furthers the purposes of AB 32. Net-zero energy operations can be achieved by procuring

[4] The Authority has forecasted GHG reductions in the following Environmental Impact Reports (EIR) and Environmental Impact Statements (EIS): 2005, 2008, 2010 and 2012 Program EIR/EIS documents, http://www.hsr.ca.gov/Programs/Environmental_Planning/EIR_EIS/index.html ;
2012 Merced-Fresno Project EIR/EIS, http://www.hsr.ca.gov/Programs/Environmental_Planning/final_merced_fresno.html ;
2014 Fresno-Bakersfield Project EIR/EIS, http://www.hsr.ca.gov/Programs/Environmental_Planning/final_fresno_bakersfield.html

[5] High-Speed Rail Authority; "Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels", June 2013; http://www.hsr.ca.gov/docs/programs/green_practices/HSR_Reducing_CA_GHG_Emissions_2013.pdf

[6] High-Speed Rail Authority; "GHG Timeline"; May 2014. https://www.hsr.ca.gov/Programs/Green_Practices/index.html

[7] High-Speed Rail Authority; "Preliminary Range of GHG Results based on 2014 Business Plan", June 2014; https://www.hsr.ca.gov/Programs/Green_Practices/

enough renewable energy to offset the amount of energy the system takes from the State's power grid to operate high-speed trains and facilities.[8]

Tree Planting Program

- To offset GHG emissions from construction activities, the Authority is implementing a multi-faceted tree planting program, likely to be carried out by CalFIRE, to sequester an amount of GHG emissions equal to direct emissions produced in construction.
- The program, developed per the principles of ARB's 2011 "*Compliance Offset Protocol Urban Forest Projects,"*[9] would plant sufficient trees to sequester GHG emissions from construction of Phase 1 Blended System. The Scoping Plan states that urban forest projects can provide the dual benefit of carbon sequestration and shading to reduce air conditioning load.[10]
- The program will also include reforestation of burnt forest lands.

Other Activities that Mitigate GHG Emissions from Construction

- The Authority has taken steps to minimize the emissions from its construction through strict, binding requirements on its construction contractors.[11] These requirements include the use of new, fuel-efficient on-road vehicles, and recycling of all concrete and steel from construction[12], as well as at least 75% of all other non-hazardous construction waste. Collectively, these steps will result in minimizing direct greenhouse gas emissions from the Authority's construction activities.[13]

[8] High-Speed Rail Authority; "Renewable Energy Feasibility Memo", April 2014; https://www.hsr.ca.gov/Programs/Green_Practices/operations.html

[9] Air Resources Board; "Compliance Offset Protocol Urban Forest Projects", October 20, 2011; http://www.arb.ca.gov/regact/2010/capandtrade10/copurbanforestfin.pdf

[10] Air Resources Board; AB 32 Scoping Plan; http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm

[11] High-Speed Rail Authority; "Executed Agreement: Book 2, Part B: General Provisions. Section 44; RFP for Design-Build Services for Construction Packages 2-3: Book 1, Part B.2 – General Provisions. Section 44", July 2013 and May 2015.

[12] The Air Resources Board has developed GHG emission reduction factors for recycling in the following document: "Method for Estimating Greenhouse Gas Emission Reductions from Recycling", November 14, 2011; http://www.arb.ca.gov/cc/protocols/localgov/pubs/recycling_method.pdf

[13] High-Speed Rail Authority; "GHG Timeline"; May 2014. https://www.hsr.ca.gov/Programs/Green_Practices/index.html

☐ Expected time frame when reductions will be achieved and how expenditure will maintain GHG reductions or net GHG benefits	▪ The expenditures for the high-speed rail system will support a long-term project (construction of which is presently underway) that will help California maintain and continue GHG reductions through 2050 and beyond. The Authority's Draft 2016 Business Plan has revised the start date to 2025 for the initial operating segment. Ridership and GHG reductions are projected to grow annually, increasing as segments of the system are completed, and increasing over its 100-year design life. ▪ High-speed rail service has been sustained and grown in countries such as Japan for the past 50 years, France for the past 33 years, and Germany and Spain for the past 22 years. Service in those countries grew and continues to grow based on initial and increasing demand, and operation at a profit. ▪ Similarly, HSRA analysis demonstrates that HSR ridership will grow and that HSR will continue to reduce GHG emissions for decades, as HSR operates over its 100-year expected life.

4. A description of how the state agency considered the applicability and feasibility of other non-greenhouse gas reduction objectives of Division 25.5 (commencing with Section 38500) of the Health and Safety Code.

☐ Expected co-benefits, particularly environmental, economic, public health and safety

In addition to reducing GHG emissions, the high-speed rail system is expected to provide a variety of co-benefits, as described below. The high-speed rail system will connect the regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands.

Environmental and Public Health Co-Benefits

- High-speed rail service will reduce vehicle miles travelled (VMT) and air travel, thereby reducing criteria pollutants and improving air quality in the State.

Co-benefits from Other Project and Mitigation Activities

- Early investments in the system will also minimize the criteria pollutants from its construction by requiring the use of Tier IV or retrofitted equivalent off-road construction equipment to the maximum extent feasible. Localized pollutants such as particulate matter can be greater around freeways, which often have a greater percentage of disadvantaged communities adjacent; reduction in vehicles (and their emissions) on these freeways due to diversion of trips from auto to high-speed rail will benefit disadvantaged communities near these freeways. The 2014 Business Plan (Section 7) contains estimated reductions for criteria pollutants.

- Grade separations, at locations with at-grade rail crossings, associated with the project through the Central Valley not only contribute to public safety, but are estimated to result in less criteria pollutant and GHG emissions.

- The tree planting program mentioned in item (2) is also designed to deliver shading of playgrounds and public spaces, building shading and reduced energy use, air quality improvements, and reduced urban heat island effects. The program will also provide soil stabilization, erosion control, and fish and wildlife habitat through reforestation of burnt lands. The Authority is also undertaking additional mitigation efforts that preserve agricultural land and maintain or restore habitat in contiguous parcels, or at a landscape level. These efforts will help achieve some of the non-greenhouse gas objectives of AB 32.

Other AB 32 Objectives and Co-Benefits

☐ How the project will support other AB 32 objectives

- Connecting California population centers, and providing new mobility and accessibility to residents of the Central Valley will catalyze compact, transit oriented development and other development patterns that result in reductions in VMT as well as less water and energy usage. The Authority is helping stimulate such development and associated benefits by the Authority's investments in updates to local land use plans and zoning codes and promotion of transit-oriented development around high-speed rail stations. As analyzed in the Vision California study, development scenarios that enable transit-oriented infill development achieve critical policy objectives of AB 32 and also have the potential to reduce additional GHG emissions.[14] Locating high-speed rail stations in existing downtown cores will assist with infill development, stimulate the local economy, reinforce SB 375 regional plans, and reduce the pressure on agricultural land.

- In addition to the benefits noted above, the benefit-cost analysis completed for the 2014 Business Plan forecasts a net benefit (MTCO2e) to the State as a result of high-speed rail service. In particular, the benefits that accrue from the system accrue both to users of the system through travel time savings and improved reliability, and to non-users through reduced auto and air congestion, fewer emissions, and fewer car crashes. Providing equivalent capacity to high-speed rail through airport and road expansion would have significantly higher costs than building high-speed rail. In addition, the roadway and airport capacity that would be needed to provide mobility for California's projected population growth would result in higher GHG emissions when compared to high-speed rail.[15]

[14] Vision California; "Charting Our Future: Statewide Scenarios Report", May 2010. https://www.hsr.ca.gov/docs/programs/green_practices/sustainability/Vision%20California%20-%20Statewide%20Scenarios%20report.pdf

[15] High-Speed Rail Authority, "Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes", April 2012. http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012CompareEquivalentCapacity.pdf

Intergovernmental Panel on Climate Change (IPCC); 5th Assessment Report, "Climate Change 2014: Mitigation of Climate Change", Chapter 8: Transport; http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter8.pdf

Percentage of total funding that will be expended for projects that are "located within" and "provide benefits to" disadvantaged communities, per the criteria in Volume 2 of ARB's Funding Guidelines	▪ 100 percent of the Initial Operating Segment is "located within" and may provide "benefits to" disadvantaged communities based on the criteria in ARB's Funding Guidelines.
Describe the disadvantaged community benefits and explain strategies the agency will use to maximize benefits	▪ IOS is expected to greatly benefit disadvantaged communities by creating thousands of direct construction-related jobs in Central Valley communities, which have some of the highest unemployment rates in the country. Over time, the project will lead to permanent operations, maintenance, and manufacturing jobs. As of November 2015, the project has employed over 200 craft labor workers in the Central Valley and contracted with 100 small businesses located within disadvantaged communities. The project has created a pipeline for workers from disadvantaged communities to apprentice in the construction trades. In addition, connecting the Silicon Valley to the Central Valley offers the potential to transform the Central Valley's disadvantaged communities by opening up new job markets for people living in the Central Valley, creating linkages between higher education institutions in the Central Valley and high-tech industries in the Silicon Valley, and incentivizing high-tech companies to locate certain functions in the Central Valley where commercial real estate is less expensive ▪ The Authority has an aggressive Small Business program that requires 30% of all contracts to include small business participation including Disadvantaged Business Enterprises (DBE), and Disabled Veteran Business Enterprises (DVBE). As of November 2015, the Authority has 266 unique small businesses committed to working on the statewide program, 94 of which are in disadvantaged communities. The Authority will target outreach and information on its jobs training and small business programs to those communities identified as disadvantaged by CalEPA for California Climate Investments within proximity to the project. ▪ Under the Community Benefits Policy, design-build construction contracts are required to adhere to the National Targeted Hiring Initiative, which requires that at least 30% of all project work hours must be performed by a National Targeted Worker and at least 10% of National Targeted Workers hours must be performed by a disadvantaged worker. The jobs training that workers will receive through this policy will later permit workers to be employed on other construction projects, delivering benefits for a lifetime. Also,

permanent jobs—train operators, maintenance yard workers, stations managers and others—will be created to operate and maintain the system.

- The Authority is implementing outreach to disadvantaged communities through its jobs outreach, Title VI compliance, Small Business Advocate, and Small Business Compliance teams trainings and workshops, as well as providing general information on GGRF funding opportunities through presentations throughout the state by its Planning and Integration teams.

5. A description of how the state agency will document the result achieved from the expenditure to comply with Division 25.5 (commencing with Section 35800) of the Health and Safety Code.

How the agency will track and report progress to make sure projects are implemented per GGRF requirements	▪ In its Sustainability Policy (October 2013) the Authority discusses tracking of information to report against metrics, including but not limited to those referenced below, in accordance with industry standard and recognized GHG emissions reporting requirements. The Authority collects this data from technical reports, as discussed in this record, as well as through tracking and reporting required of all contractors ▪ Over the life of SB 852 and SB 862 expenditures from the GGRF, the Authority will use its existing data collection processes to track progress and provide regular updates on expenditures, project status, and benefits in reports prepared according to ARB guidelines. At a minimum, the reports will include expenditure amounts, current estimates of achieved (as applicable) and projected GHG emission reductions, and quantification of other applicable co-benefits as detailed in the GGRF requirements. In addition, the Authority will report metrics in its annual sustainability report.
Approach that will be used to document net GHG reductions before and after project completion. Include citations for references that support methodology	▪ In 2013, the Authority provided a report to the Legislature on the contribution of high-speed rail service to reducing the State's GHG emissions.[16] For this report, the Authority followed a methodology based on the *Climate Registry General Reporting Protocol*, Version 2.0, as well as the best practice discussed in *Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit,* APTA 2009.[17] The Authority will work closely with ARB to refine GHG reduction methodologies and estimates, based on the best available data. ▪ As detailed in the report, net GHG benefits result when the GHG reductions from decreased VMT and air travel are greater than the GHG emissions from power production to run the high-speed rail system. To estimate GHG reductions when people shift from cars and airplanes, the Authority used emission factors from ARB. ▪ For the benefit cost analysis in the 2014 Business Plan, the

[16] High-Speed Rail Authority; "Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels", June 2013; http://www.hsr.ca.gov/docs/programs/green_practices/HSR_Reducing_CA_GHG_Emissions_2013.pdf

[17] Climate Registry; "General Reporting Protocol, Version 2.0", March 2013; http://www.theclimateregistry.org/downloads/2013/03/TCR_GRP_Version_2.0.pdf

American Public Transportation Association, "Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit", 2009. http://www.apta.com/resources/hottopics/sustainability/Documents/Quantifying-Greenhouse-Gas-Emissions-APTA-Recommended-Practices.pdf

	Authority used the same methodologies, calculations, and emission factors as were used in the 2013 report to the Legislature. However, the Authority refined modelling of the system per suggestions from the Ridership Technical Advisory Panel and the Government Accountability Office. The 2014 ridership model resulted in an updated data set for VMT reduction and air trips reduced. Enhancements in operations analysis resulted in an updated forecast of energy use for the system. ▪ The Authority will continue to use this methodology throughout project delivery, and consult with ARB on any adjustments.
☐ Type of information that will be collected to document project results, as described in ARB guidelines	▪ The Authority will collect the information needed to document GHG emission reductions, co-benefits, expenditures that benefit disadvantaged communities, and other items described in ARB's Funding Guidelines and illustrate how use of funds for high-speed rail supports AB 32 and SB 535 objectives. ▪ In addition to tracking GHG emissions and reductions, the Authority will document the following environmental co-benefits from high-speed rail implementation: o Tons of reactive organic gases (ROG) reduced. o Tons of carbon monoxide (CO) reduced. o Tons of nitrogen oxides (NOx) reduced. o Tons of sulfur oxides (SOx) reduced. o Tons of particulate matter with a diameter of 10 microns or smaller (PM10) reduced. o Tons of particulate matter with a diameter of 2.5 microns or smaller (PM2.5) reduced.
☐ How the agency will report on program status	▪ The Authority will report on program status annually through ARB's reporting templates, as well as through its annual Sustainability Report.