DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

INITIAL STATEMENT OF REASONS

TITLE 13, CALIFORNIA CODE OF REGULATIONS, DIVISION 2
AMEND CHAPTER 6, ARTICLE 2.7, SECTION 1159

ROUTES FOR TRANSPORTATION OF RADIOACTIVE MATERIALS
(CHP-R-2023-06201)

PURPOSE OF REGULATIONS AND PROPOSED AMENDMENTS

The California Highway Patrol (CHP) proposes to amend regulations in Title 13 of the California Code of Regulations (CCR) regarding the designated routes for the through transportation of highway route controlled quantity (HRCQ) shipments of radioactive materials (RAM).

Pursuant to California Vehicle Code, Division 14.5, Section 33000, the CHP shall adopt regulations specifying the routes to be used in the through transportation of HRCQ RAM. The proposed changes are developed to enhance public health and safety, and the CHP has consulted with the State Fire Marshal (SFM), California Department of Public Health (DPH), California Department of Transportation (Caltrans), San Bernardino County Fire Protection District (SBCFPD), Kern County Fire Department (KCFD), Barstow Fire Protection District (BFPD), Bakersfield Fire Department (BFD), Southern California Association of Governments (SCAG), California licensed HRCQ RAM manufacturers and carriers, and CHP's Inland Division (ID), Southern Division (SD), and Central Division (CD). After the proposed regulations are adopted, they will be provided to the United States (U.S.) Department of Transportation (DOT), Federal Motor Carrier Safety Administration, to update the National Hazardous Materials Route Registry.

PURPOSE OF AMENDMENTS

The proposed amendments will add State Route (SR)-58 between Interstate (I)-15 and SR-223, as well as SR-223 between SR-58 and I-5, as designated highways for the transportation of HRCQ RAM to enhance public health and safety in southern California.

Title 49 of the Code of Federal Regulations (CFR), Section 397.101, Requirements for Motor Carriers and Drivers, (a)(1) and (2), require that the routes to be used must minimize radiological risk to the public, considering crash rates, transit time, population density, and other relevant factors. Title 49, CFR, Section 397.103, Requirements for State routing designations, also requires the selection of routes to minimize radiological risk using "Guidelines for Selecting Preferred Highway Routes for Highway Route Controlled Quantity Shipments of Radioactive Materials" (DOT/Research and Special Programs Administration [RSPA]/Hazardous Materials Safety [HMS]/92-02) or an equivalent routing analysis which adequately considers overall risk to

the public. This routing assessment uses a combination of the mentioned guidelines and the recommended methodologies outlined in the "Highway Routing of Hazardous Materials - Guidelines for Applying Criteria" (Publication No. Federal Highway Administration [FHWA]-Highway Institute [HI]-97-003), published by the FHWA of the U.S. DOT.

Considering that HRCQ RAM shipments usually demonstrate varying radioactivity levels and that HRCQ RAM shipment packages are sealed with the highest level of protection, this assessment for the selection of a common route applicable to all HRCQ RAM shipments generalizes these differences, as well as the number of drivers facing the limited radiological exposures. Since the time of day for transporting HRCQ RAM in the state is not currently prescribed in regulations, this assessment focuses on the population and housing densities, since they are generally correlated to traffic congestion and people gathering along highways. In addition to population and housing densities, the methodologies used also take into consideration items such as the drive distance and time, number of schools, and traffic crash rates along the highways.

The data is compiled using demographic and spatial data retrieved from the 2020 census survey conducted by the U.S. Census Bureau (CB), the 2018 emergency operations center and 2020 fire station sites stored in Homeland Infrastructure Foundation-Level Data (HIFLD), the 2021 licensed acute and emergency care facilities surveyed by the California Department of Health Care Access and Information (HCAI), the 2019-2021 school sites composed and updated by the California Department of Education (CDE) and Institute of Education Science (IES), the traffic volume counts compiled by Caltrans and the Kern Council of Governments (KCOG), the crash incidents collected in the Statewide Integrated Traffic Records System (SWITRS), and the highway length and transit time derived from Google Earth (GE) and Google Maps (GM). When data is not available for certain segments of local roads, the best estimates on traffic volume counts and/or crash rates are applied. The evaluation of the relative risks for each alternative route is conducted using a geographic information system (GIS) with a 1.3-mile buffer zone of the routes referenced in the 2020 Emergency Response Guidebook (ERG) issued by the U.S. DOT Pipeline and Hazardous Materials Safety Administration (PHMSA).

RATIONALE AND ANALYSIS

While the HRCQ RAM routes were designated and became effective in 1994, SR-58 was not considered practicable because the designated routes were only on the Interstate Highway System (IHS). However, the designated HRCQ RAM routes need not only be on the IHS. Title 49, CFR, Section 397.101(b)(1), states, "a preferred route is an Interstate System highway for which an alternative route is not designated by a State routing agency." Title 49, CFR, Section 397.103(b), states, "State routing agencies may designate preferred routes as an alternative to, or in addition to, one or more Interstate System highways." Also, an interstate highway may be reassigned later as a state highway. For example, among the existing designated HRCQ RAM routes, SR-57 between I-210 and I-10 was assigned as a section of I-210 when Title 13, CCR, Section 1159, was enacted.

According to the currently designated routes, all HRCQ RAM shipments between Arizona on I-15 or I-40 and northern California or Oregon on I-5 need to be transported via a southern route near the Los Angeles area. This southern route not only requires longer driving distances and time, but also imposes more risks to densely populated southern California. Title 49, CFR, Section 397.101(b)(2), requires an interstate system bypass or beltway be used for HRCQ RAM shipments to go around a city, when available. Thus, when shipments are away from cities or when no interstate highways are available, state highways may be considered as alternative routes for commercial motor vehicles (CMV) transporting HRCQ RAM, so as to avoid populated areas and/or reduce transit distance and time. Due to road improvements conducted on state highways during the past two decades, SR-58 may prove beneficial for the transportation of HRCQ RAM. In 2009, SR-58 was assessed and used as a prescribed route for transporting 21 transuranic Waste Isolation Pilot Plant (WIPP) shipments.

To assess the benefits of designating SR-58 as an HRCQ RAM highway, three routes between Barstow and Lost Hills were evaluated first to understand their characteristics considering the potential risks they may impose to the public by transporting HRCQ RAM upon them. To transport HRCQ RAM shipments from Barstow to Lost Hills, Route 1 follows the existing designated highways, utilizing I-15, SR-210, I-210, and I-5. Route 2, an inactive route approved by CHP in 2009 for transporting WIPP shipments, utilizes SR-58, SR-99, 7th Standard Road, SR-43, SR-58, and I-5. Route 3 is a WIPP transportation route, utilizing SR-58, SR-99, and I-5, as shown on the U.S. Department of Energy website at https://www.wipp.energy.gov/routes.htm. However, from SR-99 to I-5, drivers need to reach farther south to Wheeler Ridge in order to link to I-5 northbound to Lost Hills. To shorten the route distance for the connection, Route 3 utilizes SR-166 as a more direct route between SR-99 and I-5. These routes are displayed in *Figure 1* below.

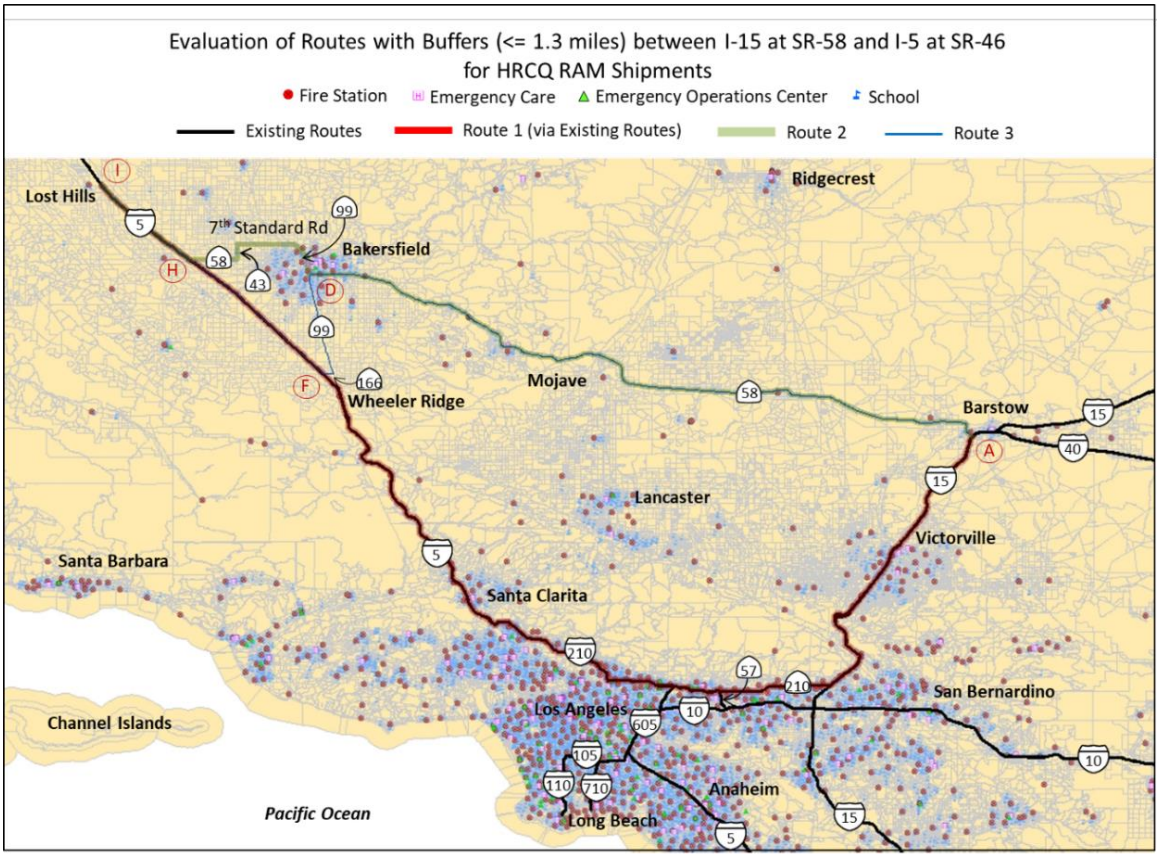

Figure 1: Routes 1 (AFHI), 2 (ADHI), and 3 (ADFHI) Evaluated for HRCQ RAM Shipments between Barstow and Lost Hills

Based on the derived characteristics of the three routes presented in Table 1, Route 1 via the existing designated route passing through southern California presents the longest drive distance and drive time, being 75 miles and 67 minutes longer than Route 2. Route 1 also has approximately a five times higher potential for population and housing exposure, as well as schools exposure, compared to Route 3. Despite Route 3 having an additional 27 miles of drive distance and an additional 18 minutes of drive time when compared to Route 2, with a low crash rate, Route 3 has the least relative population and housing risks among the three alternatives.

Table 1: Six Routes Evaluated for HRCQ RAM Shipments between Barstow and Lost Hills

Alternate Routes	Route Length (mile)	Length Difference (mile)	Ratio (Alternates/ Minimum)	Estimated Drive Time (minute)	Ratio (Alternates/ Minimum)	Potential Population Exposure (<= 1.3 mile)	Ratio (Alternates/ Minimum)	Crash Rate (crashes per million vehicle miles traveled)	Ratio (Alternates/ Minimum)
Route 1: AFHI	249.9	77.5	1.45	235	1.42	979,451	31.30	0.08	1.65
Route 2: ADHI	175.2	2.9	1.02	168	1.02	162,869	5.20	0.09	2.00
Route 3: ADFHI	202.3	30.0	1.17	186	1.13	206,499	6.60	0.05	1.09
Route 4: ABCGI	172.6	0.3	1.00	167	1.01	36,969	1.18	0.05	1.00
Route 5: ABCI	172.4	0.0	1.00	165	1.00	177,410	5.67	0.07	1.60
Route 6: ABEGI	206.2	33.8	1.20	195	1.18	31,291	1.00	0.07	1.45

Table 1 (continued)

Alternate Routes	Relative Population Risk (people per million vehicle miles traveled along route)	Ratio (Alternates/ Minimum)	Number of Schools (<= 1.3 mile)	Ratio (Alternates/ Minimum)	Potential Housing Exposure (<= 1.3 mile)	Ratio (Alternates/ Minimum)	Relative Housing Risk (housing per million vehicle miles traveled along route)	Ratio (alternates/ minimum)
Route 1: AFHI	74,061	35.72	361.00	24.07	338,656	27.84	25,607	43.82
Route 2: ADHI	14,950	7.21	64.00	4.27	55,775	4.59	5,120	8.76
Route 3: ADFHI	10,321	4.98	72.00	4.80	66,154	5.44	3,306	5.66
Route 4: ABCGI	1,693	1.00	21.00	1.40	12,758	1.05	584	1.00
Route 5: ABCI	12,980	6.26	69.00	4.60	58,647	4.82	4,291	7.34
Route 6: ABEGI	2,073	1.22	15.00	1.00	12,163	1.00	806	1.38

While Route 3 shows the best potential among these three routes, three additional routes were added to the analysis, as shown in *Figure 2*, and their specific characteristics were derived and added into Table 1 for a comparison. Between Barstow and Lost Hills, Route 4 utilizes SR-58, SR-223, and I-5. Route 5 traverses through central Bakersfield via SR-58, SR-99, and SR-46. Route 6 utilizes SR-58, SR-14, SR-138, and I-5, and is currently a designated route used by CMVs for the transportation of inhalation hazards specified in Title 13, CCR, Sections 1157.12 and 1157.14.

Route 5 is the most direct and shortest route between Barstow and Lost Hills. However, since Route 5 traverses through central Bakersfield, as Route 2 does, Route 5 also has a comparatively greater potential for population and housing exposure. Compared to Route 5, Routes 4 and 6 are away from the densely populated area of central Bakersfield, having approximately one fifth of the potential for population and housing exposure. While Route 6 has the least number of schools and potential population and housing exposure within its 1.3 miles of buffer, among the six alternatives, it has a significantly longer drive distance and drive time, as well as a higher crash rate than Route 4. With the lowest crash rate (0.046 crashes per million vehicle miles traveled), shorter drive distance and drive time, and lower potential population and housing exposure, Route 4 via SR-58, SR-223, and I-5 has the least relative population and housing risks among the six alternatives.

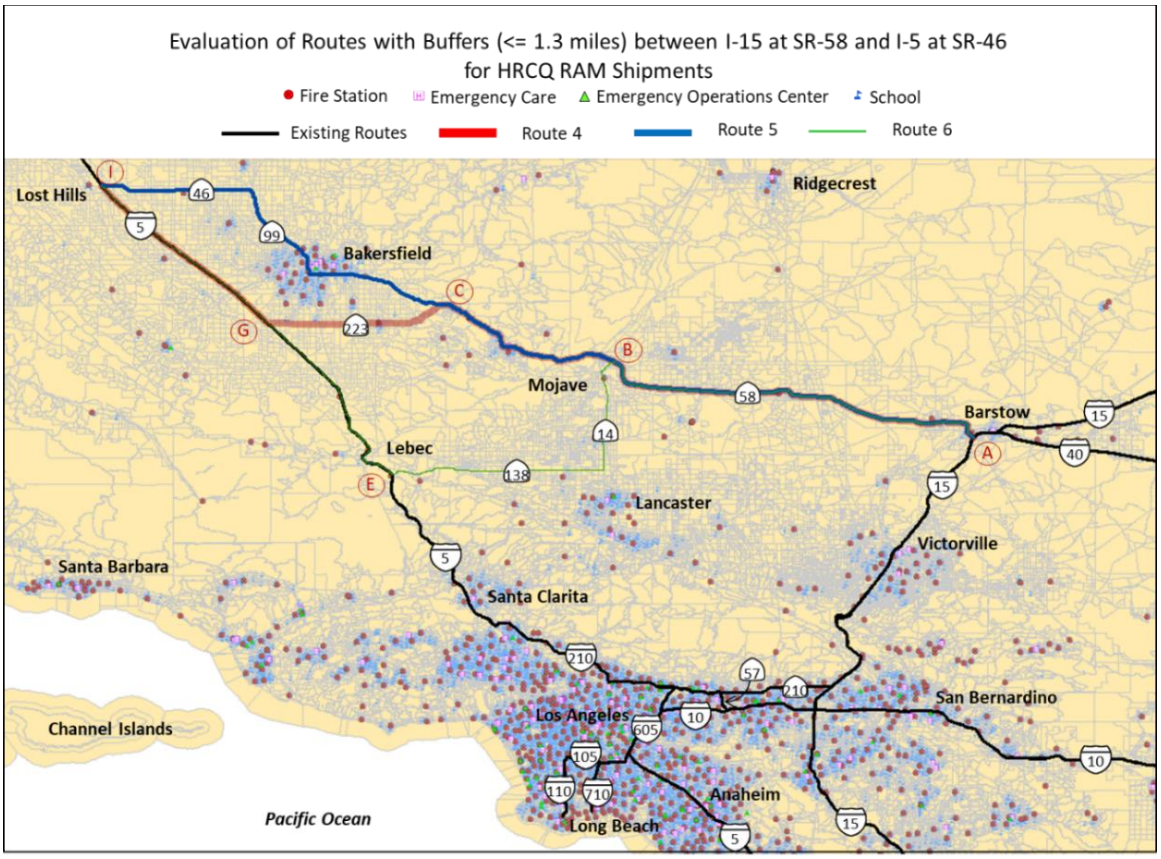

Figure 2: Routes 4 (ABCGI), 5 (ABCI), and 6 (ABEGI) Evaluated for HRCQ RAM Shipments between Barstow and Lost Hills

Adopting Route 4 as a designated HRCQ RAM route adds a total of 133.1 miles of highway by adding portions of SR-58 and SR-233 to the existing designated routes between I-15 near Barstow and I-5 near Bakersfield, as shown in *Figure 3*. However, compared to Route 4, the existing route, depicted as Route 1, traversing through southern California, requires 77 miles longer drive distance and 68 minutes more drive time, and imposes 36 percent and 44 percent higher relative risks to its population and housing units, respectively, as well as risks to 361 schools in its 1.3-miles of buffer zone along the route. Therefore, Route 4, crossing the Mojave area between Barstow and Lost Hills, is the best route of the six alternative routes evaluated for CMVs transporting HRCQ RAM in order to avoid traveling through densely populated southern California. In addition to transporting HRCQ RAM, Route 4 may also serve as a WIPP route, when necessary. California has designated SR-58 and SR-223 as truck routes under the federal Surface Transportation Assistance Act of 1982.

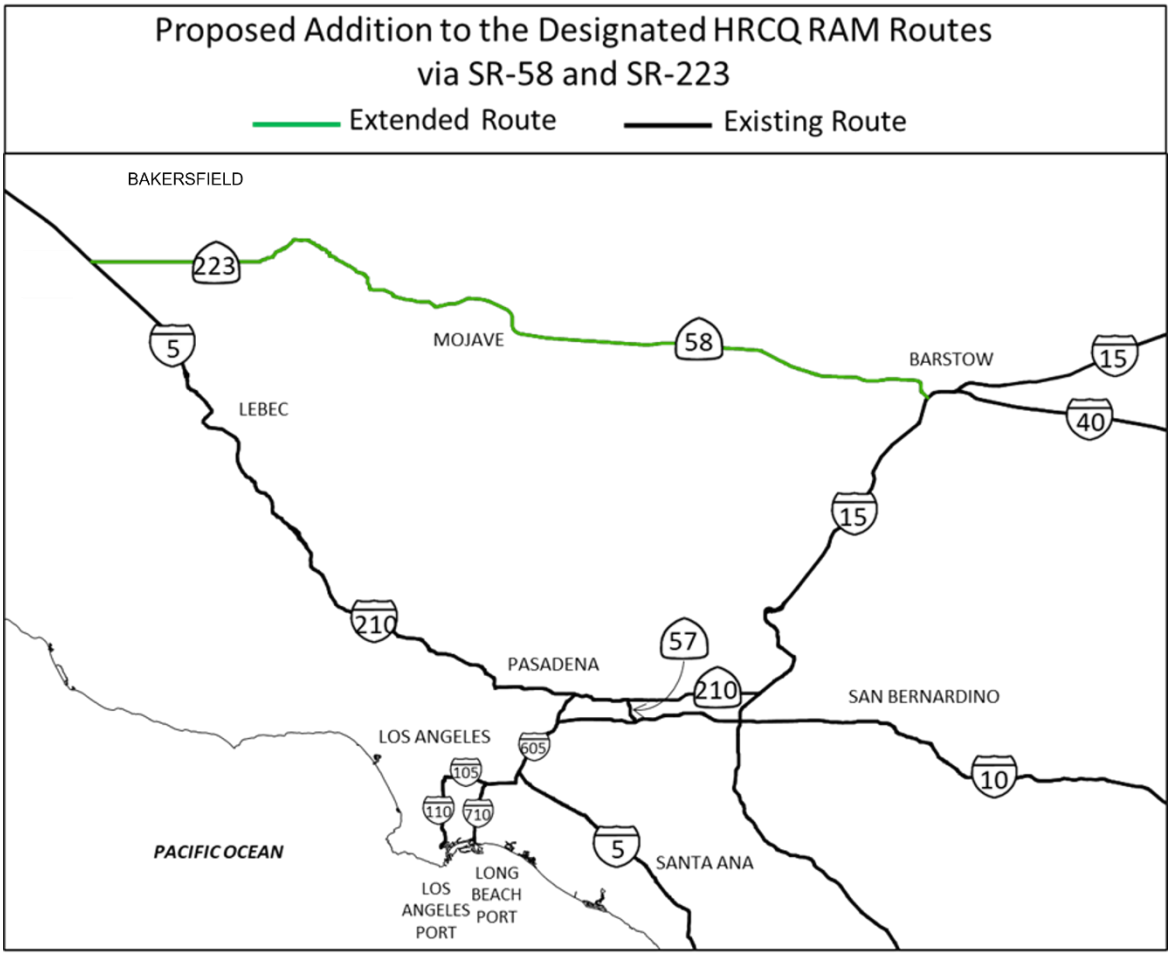

Figure 3: Proposed Extension of Designated Routes for HRCQ RAM Shipments Transported via SR-58 and SR-223 through the Mojave Area

In summary, based on this assessment, the CHP proposes to add 103.0 miles of SR-58 between I-15 and SR-223, and 30.1 miles of SR-223 between SR-58 and I-5 into the designated routes specified in Title 13, CCR, Section 1159, to provide a more direct route between Barstow and Lost Hills for CMVs transporting HRCQ RAM, thus enhancing public health and safety.

STUDIES/RELATED FACTS

The evaluation of possible routes followed the recommended methodologies outlined in the Guidelines for Selecting Preferred Highway Routes for Highway Route Controlled Quantity Shipments of Radioactive Materials (DOT/RSPA/HMS/92-02) and in the Highway Routing of Hazardous Materials – Guidelines for Applying Criteria (Publication No. FHWA-HI-97-003) published by the US DOT FHWA. The data used for this analysis came from the 2020 census survey conducted by the U.S. CB, the 2018 emergency operations center and 2020 fire station sites stored in HIFLD, the 2021 licensed acute and emergency care facilities surveyed by HCAI, the 2019-2021 school sites composed and updated by CDE and IES, the traffic volume counts compiled by Caltrans and KCOG, the crash incidents collected in SWITRS, and the highway

length and transit time derived from GE and GM. When data was not available for certain segments of local roads, the best estimates on traffic volume counts and/or crash rates were applied. The evaluation of relative risks for each alternative route was conducted using a GIS with a 1.3-mile buffer zone of the routes referenced in the 2020 ERG issued by PHMSA.

CONSULTATION WITH OFFICIALS

Concurrences were received from SFM, DPH, Caltrans, KCFD, SBCFPD, BFPD, BFD, SCAG, California licensed HRCQ RAM manufacturers and carriers, and CHP's ID, SD, and CD.

ALTERNATIVES

Other than the alternatives discussed above, no reasonable alternative considered by the CHP, or otherwise identified and brought to the attention of the CHP, would be more effective in fulfilling the purpose for which the action is proposed, or as effective and less burdensome to affected private persons, than the proposed action. The alternative of making no changes to the existing regulations was rejected because it failed to keep information current in the CCR. Failing to provide updated routes to carriers may increase the potential risks of detrimental hazards while transporting HRCQ RAM in the state.

LOCAL MANDATE

These regulations do not impose any new mandate on local agencies or school districts.

ECONOMIC IMPACT ANALYSIS

Creation or Elimination of Jobs

The CHP has made an initial determination that this proposed regulatory action will neither create, nor eliminate, jobs within the State of California because the regulation only designates an additional 133.1 miles of HRCQ RAM routes and the transportation of HRCQ RAM by CMVs along the proposed routes presents only a small portion of total vehicle movement in the state.

Creation of New Business, or Elimination or Expansion of Existing Business

The CHP has not identified any significant adverse impact on the creation of new businesses, or elimination or expansion of existing businesses within the State of California. Businesses involved in the transportation of HRCQ RAM will have more consistent and updated information on designated routes in the state. The proposed regulatory action will not create new businesses, or eliminate or expand any existing business by transporting HRCQ RAM via the updated routes.

Benefits of the Regulation

This proposed regulatory action will continue to provide a nonmonetary benefit by protecting the health and welfare of California residents, workers, and environment. The proposed changes implement existing statute by updating and clarifying the safe and efficient routes designated for carriers transporting HRCQ RAM.

BUSINESS IMPACT TO THE STATE

The proposed regulatory action adds 133.1 miles of designated highway routes for motor carriers transporting HRCQ RAM in California. Based on the economic impact analysis, the CHP has made an initial determination that the proposed regulatory action would have no significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states.

FISCAL IMPACT TO THE STATE

The CHP has determined these regulation amendments will result in:

- No significant increased costs for persons or businesses;
- No significant compliance costs for persons or businesses directly affected;
- No discernible adverse impact on the quantity and distribution of goods and services to large and small businesses or the public;
- No impact on the level of employment in the state; and
- No impact on the competitiveness of California to retain businesses, as the regulation amendments will enhance health and safety for businesses and the public regarding the transportation of HRCQ RAM.