Report to the Legislature:

Five-Year Plan for the Waste Tire Recycling Management Program (Eighth Edition Covering Fiscal Years 2015/16-2019/20)

CalRecycle

California Department of Resources Recycling and Recovery

Revised June 2016

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STATE OF CALIFORNIA

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Introduction

Senate Bill (SB) 876 (Escutia, Chapter 838, Statutes of 2000) was a comprehensive measure enacted to extend and expand California's regulatory program related to the management of waste and used tires. One of the key provisions of SB 876 requires CalRecycle to adopt and submit to the Legislature a Five-Year Plan that identifies priorities, performance criteria, and budget allocations. It requires that the plan be updated every two years.

The eighth revision of the Five-Year Plan has been developed based on the experience gained from the previous programs, projects, and reports; input from public and private stakeholders, other states and counties, contractors, and staff; and a public meeting in October 2014 to obtain input on a draft of this biennial update. One of the first reports related to this issue, titled *California Waste Tire Program Evaluation and Recommendations: Final Report* (Pub. #1999-006, also referred to as the AB 117 report), included recommendations to address such waste tire issues as elimination of waste tire stockpiles; protection of public health, safety, and the environment; and an increase in sustainable economic markets for waste tires in California. Many of the recommendations in the report required by Assembly Bill (AB) 117 (Escutia, Chapter 1020, Statutes of 1998) provided the foundation for the original plan. Other reports and studies[1] concerning tire-related issues, and the Waste Tire Market Development Program Evaluation Project that was completed in 2010, also have provided guidance to CalRecycle for setting priorities.

CalRecycle's goal as stated in the last several editions of the Five-Year Plan has been to achieve 90 percent diversion of waste tires from landfills[2] by the year 2015. Affiliated goals include the following:

- Developing long-term, sustainable, and diversified market demand for California tire-derived products;
- Ensuring the protection of public health, safety, and the environment while developing a safe and high-quality supply infrastructure to meet that demand; and
- Fostering information flow and technology and product development so environmental protection and diversion goals are achieved with supply and demand in balance.

CalRecycle also has outlined a vision for the future that would focus on increasing the recycling rate rather than just the diversion rate (see "Vision for the Future" below). This would require new legislation and programs, so this edition of the plan continues to focus on existing programs.

The enforcement elements of the Waste Tire Recycling Management Program are designed not only to protect public health, safety, and the environment but also to provide for a fair and consistent marketplace

[1] Past reports and studies can be accessed through CalRecycle's Publications Catalog at http://www.calrecycle.ca.gov/Publications/default.asp?cat=16

[2] CalRecycle's 90 percent goal is not codified in statute but reflects CalRecycle's policy goals adopted in 2005. CalRecycle's diversion estimates and goal are based on the number of whole tires that are used to make products or flow to other non-landfill locations; they are not adjusted for residuals such as fluff and steel.

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for recycled tires. CalRecycle has moved aggressively to expand tire enforcement efforts and revise current regulations. In 2014, CalRecycle completed a four-year process to amend its waste tire storage, disposal, permitting, and enforcement regulations. Among the changes made, the amended regulations incorporate the 2010 and 2013 changes in the California Fire Code, simplify the waste tire facility permit renewal procedures, establish a notification requirement for excluded waste tire facilities, and streamline the waste tire enforcement process. The new regulations took effect on October 29, 2014.

Our enforcement staff provides technical assistance and training to the regulated community that includes tire haulers, tire generators, and permitted tire facilities. However, if a business demonstrates an unwillingness to comply and is not responsive to technical assistance and training, then CalRecycle initiates enforcement action. Tire facility permitting, coupled with expanded and robust statewide enforcement efforts, is working to ensure a level playing field for tire facilities, haulers, and generators who operate within the law.

With respect to diversion and market development, after reaching an all-time high of 92.9 percent diversion in 2012 (and exceeding CalRecycle's 90 percent goal), the overall waste tire diversion rate dipped to 87.3 percent in 2013 due to a decrease in tires exported overseas. Tire disposal increased proportionately in 2013 to 12.7 percent from an all-time low in 2012 of 7.3 percent of all tires.[3] Waste tire exports are dynamic. The increase in 2012 was mainly a result of the continued, unprecedented rapid growth in the export of waste tires to Pacific Rim nations, largely for use as tire-derived fuel (TDF), which is now the largest end-use destination for California waste tires. And while exports are estimated to have declined in 2013, it appears that they are on the rebound in 2014.

CalRecycle's current market development programs continue to focus on increasing the processing of California waste tires into California-produced tire-derived products. To move CalRecycle closer to this goal, in 2014 a new pilot tire incentive program was established. This pilot program provides economic incentives to participating manufacturers to increase sales to businesses. While many stakeholders would prefer a free-market system with no subsidies, CalRecycle's perspective is that subsidies will continue to be needed to establish markets for products that incorporate waste tires into end uses such as paving, molded products, retaining walls, etc. As a corollary, CalRecycle continues to believe that a variety of markets that use California-produced products is preferable, rather than focusing on only one primary market, even if the cost per tire varies among these end uses. This approach is consistent with CalRecycle's new policy goal that 75 percent of the solid waste generated be source-reduced, recycled, or composted by 2020.

Tire management issues and activities in the California-Mexico border region are summarized in Appendix B. A new project also is planned that will 1) better define current problems by updating information on used and waste tire flows in the border region; and 2) work with key partners to clarify and prioritize which projects would best contribute to long-term environmental protection in the region. This is described in more detail in the section on research and market development activities.

[3] California Waste Tire Market Report: 2013

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Vision for the Future

For years, CalRecycle has relied on a variety of grant programs, along with focused research, technical support, and outreach as the bulwark of its market development efforts. While these efforts have been successful in expanding markets and helping businesses to increase production and/or develop new products, the facts speak to the need to reassess this fundamental market development approach. In particular, the tire recycling rate (specifically, the rate for activities that result in use of waste tires to produce marketable products as opposed to exports or use as ADC) has hovered around 40 percent for several years. Bcause of exports and ADC end use, along with use of TDF for energy recovery, the total diversion rate has reached into the 90 percent range. In accord with implementing AB 341's 75 percent recycling goal, and CalRecycle's complementary focus on handling waste materials within California in an environmentally safe mananer, and its emphasis on generating jobs within the State, CalRecycle proposes the following long-term vision for the future of tire recycling in California. This vision will require significant legislative changes.[4]

The primary change would be to implement an expanded incentive program that provides payments for desired end uses of tires. This would entail differential incentive payment rates. The highest payments would be for preferred end uses such as incorporation of crumb rubber into rubberized asphalt concrete. Lower payments would be fortire-derived aggregate in retaining walls and other uses.

This approach focuses on creating demand by assisting manufacturers in covering the costs of marketing their products against competing non-recycled products; it is modeled after similar incentive programs such as for plastic market development, etc. In order to be effective and reach as high a recycling rate as possible, such a program would require on the order of tens of millions of dollars per year, an amount that is currently not available from the Tire Recycling Management Fund given the need to devote funding to enforcement, the manifest system, and administrative costs. This approach would not include payments to processors for the production of material, as that would likely create an oversupply of material and result in downward pricing. However, it could include requiring processors to be responsible for ensuring that tires are appropriately collected and providing a small incremental payment so that processors could pay haulers depending on the distance traveled.

This primary change will require the following legislative changes:

1) Increase the fee for new tires to a level of approximately $3.50 to $4 to provide the necessary funding support for the incentive payments.
2) Prohibit generators (tire shops/dealers) from charging any other fees for handling/disposal of tires because this would be covered by 1) and appropriately channeled to fund the tire incentive payments.

[4] CalRecycle notes that another alternative is to consider an Extended Producer Responsibility (EPR) approach; the applicability of this policy approach for tires was discussed by CalRecycle in a 2012 contractor report and workshop. CalRecycle oversees other EPR programs and could assess legislative proposals for a tire EPR program. However, to date the Legislature has not broached this concept for tires and instead has retained the current fee-based approach. CalRecycle therefore is proposing an incentive-based approach in the context of the existing tire fee-based approach.

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3) Repeal the rubberized pavement grant mandate since this use would be covered by the incentive payments.
4) Eliminate most of the existing market development grant programs, as these would be replaced by the incentive payments.
5) Continuously appropriate tire funds to provide continuity to programs across fiscal year boundaries.

Implementation of this vision would significantly change waste tire management and markets in California and have ripple effects far beyond the state's border. Many details would have to be vetted before making such a paradigm shift, including the timing of such a shift, appropriate funding levels, how to ensure a sustainable market, and whether and how to reduce or eliminate other incentives/subsidies for various products and markets. With respect to details of the incentive payment approach proposed by CalRecycle, one fundamental question is where any incentive payments should be targeted. CalRecycle's proposal focuses on payments to manufactures, but CalRecycle recognizes that other variations are worth considering as well, e.g., the suggestion to provide payments to state and local agencies for use of RAC and other products.

CalRecycle's long-term vision also would entail other legislative changes to augment this approach:

1) Mandate that State agencies, universities/colleges, and local governments procure tire-derived products, where such products meet specifications and are economically feasible.
2) Prohibit, with a phased-in ban over a reasonable time period and if sufficient processing capacity is available, tire disposal and the use of tire-related ADC.
3) Require that waste tires be processed with at least a minimal level of shredding to discourage disposal and to ensure an adequate supply of processed tires for recycling.
4) Support source reduction by requiring a minimum tire life of 60,000 miles. Tires meeting this standard would be subject to the normal new tire fee, while tires with a lower life would be subject to higher fees.

As part of this long-term approach, CalRecycle also would propose to increase supporting research, consolidate its tire cleanup grant programs into a more efficient set of programs, eliminate some market development grant programs, and provide the required emergency reserve through an escrow account or contract. It would continue the current level of support for inspection and enforcement activities, the hauler manifest system, market trend analysis and targeted outreach, and consolidated technical support for rubberized asphalt concrete and tire-derived aggregate projects.

In addition to this long-term vision embodying an incentive approach, CalRecycle also is committed to continuing to work with the Border Relations Council and its Regional Solid Waste Working Group to address problems related to waste tires in the California-Mexico border region. The 2015 Budget Act's accompanying trailer bill broadened CalRecycle's planning responsibilities with regard to the border region and authorized funding for the Border Relations Council. The Council awarded cleanup and prevention grants to two nonprofit organizations in January 2016. CalRecycle provided funding in fall 2015 to remove tires, brush and waste materials from the Tijuana River Valley; entered into a new tire flow study contract with the San Diego State University Research Foundation in December 2015 to provide additional support for border-related planning and project implementation; and continues to actively support and participate in the Regional Solid Waste Working Group strategic planning process and related activities.

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Program Elements

Most of the changes suggested above will, as noted, require legislative change. In the interim and in this Five-Year Plan, CalRecycle proposes changes that would entail increased research (e.g., Caltrans specification development, landfill tire-related emissions, end-of-life management of synthetic turf fields and playgrounds, continuation of the previously funded Office of Enviromental Health Hazard Assessment study on the health effects of crumb rubber in synthetic field turf), elimination of some cleanup programs, and consolidatation of market development technical support activities. As with the longer-term vision, CalRecycle would continue current levels of support for other activities such as inspection and enforcement, hauler manifest system, market analysis, etc.

The Five-Year Plan is divided into the program elements identified in Public Resources Code section 42885.5(b). These elements are:

- Enforcement and Regulations Relating to the Storage of Waste and Used Tires
- Cleanup, Abatement, or Other Remedial Actions Related to Tire Stockpiles Throughout the State
- Waste and Used Tire Hauler Program and Manifest System
- Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires
- Market Development and New Technology Activities for Waste and Used Tires

Each of the program elements consists of five sections:

1. *Program Background and Status.* This section includes background information, a summary of achievements, and an overview of planned activities.
2. *Direction Provided by SB 876.* This section lists the specific statutory language that directs the particular program element.
3. *Objectives.* This section lists the objectives the program element is designed to achieve.
4. *Performance Measures.* This section identifies how individual or groups of related element activities can be measured to show how well objectives and goals are met.
5. *Activity Description and Budget.* This section includes an overall chart of element activities and describes each activity with associated budget information by fiscal year.

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Budget and Summary

The eighth edition of the Five-Year Plan presents the following budget for CalRecycle's tire program for Fiscal Years 2015/16 through 2019/2020. The proposed expenditures reflect the spending authority limit for the tire program as outlined in the Governor's Budget.

Table 1: Total Tire Program Funding for Fiscal Years 2015/16-2019/20

Program Areas	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	Totals for All Fiscal Years
Enforcement	$7,585,000	$7,585,000	$7,585,000	$7,585,000	$7,585,000	**$37,925,000**
Hauler Program and Manifest System	$450,000	$450,000	$450,000	$450,000	$450,000	**$2,250,000**
Cleanup*	$7,800,000	$7,800,000	$7,600,000	$7,600,000	$7,450,000	**$38,250,000**
Research and Market Development**	$15,001,000	$14,701,000	$14,901,000	$14,901,000	$10,051,000	**$69,555,000**
Program Staffing	$8,427,000	$8,427,000	$8,427,000	$8,427,000	$8,427,000	**$42,135,000**
Administration	$4,243,000	$4,243,000	$4,243,000	$4,243,000	$4,243,000	**$21,215,000**
Mandatory Contracts	$1,258,000	$1,258,000	$1,258,000	$1,258,000	$1,258,000	**$6,290,000**
Totals	**$44,764,000**	**$44,464,000**	**$44,464,000**	**$44,464,000**	**$39,464,000**	**$217,620,000**
Spending Authority	**$44,764,000**	**$44,464,000**	**$44,464,000**	**$44,464,000**	**$39,464,000**	**$217,620,000**

** The cleanup element includes the Farm and Ranch Solid Waste Cleanup and Abatement Grant Program. Its spending authority is separate from the Tire Recycling Management Fund's spending authority.*

***The Research and Market Development element for FY 2015/16 includes $300,000 that is appropriated to the California Environmental Protection Agency to support the California-Mexico Border Relations Council.*

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Enforcement and Regulations Relating to the Storage of Waste and Used Tires

Enforcement Program Background and Status

The Waste Tire Enforcement Program's primary goal is to manage and mitigate the impacts of tires on public health and safety, and the environment, by ensuring that tire businesses comply with tire permitting, storage, and movement laws, regulations, and state minimum standards. Compliance is monitored through integrated and consistent permitting, inspection, and enforcement efforts. CalRecycle works closely with state and local governments to:

- Inspect tire businesses for compliance with permitting, storage, and movement laws, regulations, and state minimum standards;
- Educate tire businesses and property owners about tire laws and regulations;
- Look for illegal dumping, storage, and movement of tires; and
- Take enforcement actions as needed to correct violations.

CalRecycle's Waste Tire Enforcement Program is closely aligned and cooperatively administered with other cleanup-related components in the Five-Year Plan. For example, enforcement actions against the largest known waste tire sites in Sonoma County resulted in negotiated settlements with cleanups administered by CalRecycle's Cleanup Branch. Vigorous waste tire enforcement pursuant to CalRecycle's policy goals minimizes the chances for large tire sites to develop and to go unaddressed and for subsequent environmental crises such as tire fires like those that occurred in the late 1990s in Westley and Tracy. The costs for long-term remediation as part of the Five-Year Plan's Cleanup and Remediation element have been significantly reduced and are expected to continue to be positively impacted in future years.

The Tire Enforcement Branch and the Cleanup Branch cooperate with the Financial Resources Management (FiRM) Branch on the administration of the Farm and Ranch Solid Waste Cleanup and Abatement, Local Government Amnesty, and Local Government Waste Tire Cleanup grant programs. For example, when enforcement staff discovers waste tire piles on privately owned agricultural property, and the tire piles are determined not to be the responsibility of the landowner, the Tire Enforcement Branch brings them to the attention of the FiRM Branch staff for potential grant funding consideration. Conversely, grant applications for Farm and Ranch grants, which are independently received, for which landowner certifications of non-responsibility cannot be obtained, are referred to the Tire Enforcement Branch for appropriate follow-up. Over time, concerted enforcement action to reduce illegal waste tire disposal is expected to reduce the need for tire cleanup grant funds.

The Tire Enforcement Branch coordinates with the FiRM Branch to implement the Local Government Waste Tire Enforcement (TEA) Grant Program that supports the activities of 47 local jurisdictions in CalRecycle's waste tire enforcement efforts and also coordinates with and provides support for CalRecycle's illegal dumping initiatives. Waste tires are often illegally dumped along with other solid waste. Therefore, waste tire program field personnel and the surveillance support available through the TEA Grant Program can, in many instances, be leveraged to address both waste tire and other illegal dumping objectives.

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CalRecycle's Tire Enforcement Branch is aligned with CalEPA's enforcement initiatives, which include a progressive enforcement program. When a violation is first identified (the first offense), a standard Notice of Violation is issued. If the violation is not corrected or is a repeat of past violations, the following enforcement actions are taken until the violation has been resolved:

- Cleanup and abatement orders;
- Administrative complaints; and,
- Referrals to local district attorney's offices and the California Attorney General's office.

Civil and criminal actions are reserved for egregious violations and repeat offenders.

Since many of the initial legacy piles have been brought into compliance, CalRecycle has redirected resources to focus more on maintenance and prevention of illegal tire piles through permitting, inspection, and the waste tire hauler registration and manifest programs. Additionally, ongoing ground and aerial surveillance assists enforcement efforts by identifying remote illegal tire sites and illegal tire business activities. These programs, especially focusing on inspection and surveillance, generate enforcement cases on an ongoing basis.

In 2014, CalRecycle completed a four-year process to amend its waste tire storage, disposal, permitting, and enforcement regulations. Among the changes made, the amended regulations incorporate the 2010 and 2013 changes in the California Fire Code, simplify the waste tire facility permit reapplication procedures, establish a notification requirement for excluded waste tire facilities, and streamline the waste tire enforcement process. The new regulations took effect on October 29, 2014.

Objectives

The enforcement program has the following objectives:

1. Support existing and new waste tire enforcement grantees by providing stable funding, training, and ongoing technical assistance.
2. Inspect tire businesses on a routine basis to ensure compliance with all state tire permitting, storage, and movement laws, regulations, and state minimum standards.
3. Provide ongoing surveillance for illegal tire sites. Identify and investigate all suspected illegal tire sites through ground and aerial surveillance and respond to complaints.
4. Bring all known sites that are operating illegally (without the proper permits and/or operating outside the terms and conditions of their permits, or state minimum standards) into compliance through a progressive enforcement program.
5. Manage a tire database that will collect, store, and report the necessary information for an effective program.

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Performance Measures

The seventh edition of the Five-Year Plan (2013) contained four performance measures for the Enforcement Element, which are listed along with accomplishments for the previous fiscal year in Appendix A. The performance measures listed below have been updated to align with the activities listed in this Biennial Revision of the Five-Year Plan.

1. **Inspections:**
    a. Inspect all active major and minor permitted facilities at least once every fiscal year.
    b. Inspect all active registered haulers at least once every two fiscal years.
    c. Inspect all active generators at least once every three fiscal years.
    d. Monitor the results of inspections by compiling comparative annual data of the number of inspections performed, Notices of Violation issued, and referrals made to CalRecycle.

2. **Surveillance:**
    a. Monitor the effectiveness of surveillance activities by compiling comparative annual data of illegal tire piles identified via grantee or CHP surveillance.

3. **Noncompliant Tire Businesses:**
    a. Monitor the effectiveness of progressive enforcement actions by compiling comparative annual data of enforcement actions initiated and resolved.

4. **Grant Program:**
    a. Increase or maintain waste tire enforcement grantee coverage in the state to 80 percent or more of active tire businesses for each fiscal year.
    b. Conduct at least two grantee round tables per fiscal year.
    c. Participate in the Annual Tire Conference.
    d. Monitor the effectiveness of the grant program by compiling comparative annual data of grant funds awarded and expended.

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Activity Description and Budget

The waste tire enforcement program will implement a two-pronged approach to statewide enforcement, using local enforcement entities where available and state resources in “other” areas. This program will provide ongoing assistance to local jurisdictions and oversee the entire effort. Table 2 provides a list of activities and associated budgets for the enforcement and regulations relating to the storage of waste and used tires.

Table 2: Budget for Enforcement and Regulations Relating to the Storage of Waste and Used Tires

Program Area	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Waste Tire Enforcement Support Activities	$120,000	$320,000	$120,000	$320,000	$120,000
California Highway Patrol Agreement to Support Enforcement Activities	$200,000	$0*	$200,000	$0*	$200,000
Local Government Waste Tire Enforcement Grant Program	$7,000,000	$7,000,000	$7,000,000	$7,000,000	$7,000,000
Database System Maintenance and Enhancement	$165,000	$165,000	$165,000	$165,000	$165,000
Tire Enforcement Inspector Technical Training	$100,000	$100,000	$100,000	$100,000	$100,000
Totals	**$7,585,000**	**$7,585,000**	**$7,585,000**	**$7,585,000**	**$7,585,000**

*Budget amounts are $0 because the contracts are on two-year cycles.

1. **Waste Tire Enforcement Support Activities:** This line item supports the overall mission of enforcing the laws regarding the hauling, storage, and disposal of waste and used tires in California and along the California/Mexico border region and illegal activities related to export of tires through California ports. Funds will be allocated to the following projects:

   - **Surveillance Equipment and Assistance:** CalRecycle entered into an agreement with the Air Resources Board (ARB) in May 2014 which continues ARB's previous support of field investigative efforts by CalRecycle tire enforcement staff and local enforcement waste tire grantees. ARB has extensive experience in assisting other agencies in the purchase, maintenance, monitoring, and use of both covert and overt surveillance equipment. ARB's expertise has aided, and should continue to aid, CalRecycle and local waste tire grantees in their efforts to deter or locate and prosecute those who illegally haul or dispose of tires, or illegal activities related to tire exports through California ports. Additionally, ARB will help CalRecycle identify and procure more sophisticated surveillance equipment for covert activities to allow for real-time remote monitoring and sensing.

   - **Enforcement Case Assistance:** CalRecycle's Legal Office generally prosecutes administrative enforcement penalty actions to ensure uniformity of enforcement and to expedite processing. However, criminal and certain civil enforcement cases must be referred to the Attorney General's office or local district attorneys' offices. Some jurisdictions do not have the resources to handle waste tire misdemeanor cases. CalRecycle will continue to work with authorized enforcement organizations as contractors or grantees for investigative and prosecutorial services to pursue criminal or civil enforcement actions including enforcement actions related to tire exports from California ports.

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- **California Environmental Quality Act (CEQA) Compliance Support:** CalRecycle will procure contractor support for conducting required CEQA analyses for new permitted facilities or for permitted facilities that want to/need to expand their facility's authorized operating limits. Often facilities with a minor waste tire facility permit find that the practical operating demands of remaining viable within their industry bring them into conflict with the statutory 4,999 waste tire storage limit of their minor permit. For these facilities, one of the biggest hurdles in acquiring the needed major waste tire facility permit, which would enable them to operate successfully while staying in compliance, is meeting the CEQA requirements for the larger permit. The contractor will provide CEQA expertise and analyses for CalRecycle to complete the needed CEQA compliance in considering applications for major permits.

- **Permitting Assistance Contract:** Permitted waste tire storage and processing capacity in the state is limited and needs to be expanded. Providing contractor support with expertise in local land use and state permitting requirements would help local waste tire facilities more quickly comply with permitting requirements and achieve a permitted status that fits their business operations while ensuring compliance with waste tire laws. This would provide waste tire enforcement resources to operators who are complying but who need expertise in permitting to expand their business.

- **Waste Tire Enforcement Inspectors and Managers Coordination, Training, and Development**:

  - CalRecycle will continue to provide training and convene meetings to support enforcement case development and enforcement training, including environmental compliance in support of training for both law enforcement and grantees.

  - CalRecycle will procure contractor support to develop and implement distance learning capabilities and curricula via the Internet supporting initial and ongoing training for local tire enforcement grantee inspectors. This will enable more inspectors to receive more frequent training than is currently capable and will leverage limited travel budgets that currently prevent many inspectors from being able to attend in-person annual and periodic roundtable training sessions. This effort will also focus on providing ongoing education and training to waste tire haulers as part of their annual registration renewal activities. The overall effort is focused on using the ever-expanding reach of the Internet to communicate with our partners and stakeholders in the regulated community and provide needed education and training. The latter is part of CalRecycle efforts to achieve greater waste tire enforcement compliance through expanded education and outreach. This will enable CalRecycle to focus limited enforcement resources on more serious and repeat offenders.

Activity Funding
FYs 2015/16, 2017/18, and 2019/20…….$120,000 per fiscal year
FYs 2016/17 and 2018/19……...……..$320,000 per fiscal year

2. **California Highway Patrol (CHP) Agreement to Support Enforcement Activities:**
CHP will continue its support to CalRecycle's field efforts in the areas of ground and aerial surveillance, covert and overt investigations, inspector security, training for state and local law enforcement officers, and roadside checkpoints to assist CalRecycle as well as local enforcement

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personnel in regard to waste facility and hauling violations. This effort with CHP includes a surveillance and enforcement support focus on illegal activities related to tire exports through California ports and in the California/Mexico border region. If CHP is unable to continue this work after the current contract expires due to budget or priority issues, CalRecycle will pursue a similar agreement with other law enforcement agencies.

Activity Funding
FYs 2015/16, 2017/18, and 2019/20……$200,000 per fiscal year

3. **Local Government Waste Tire Enforcement Grant Program:** This program enhances California's waste tire enforcement infrastructure by providing noncompetitive grants to cities, counties, or cities and counties to perform local waste tire inspection and enforcement activities. This program augments CalRecycle's enforcement efforts overseeing the proper management and flow of waste tires throughout the state. Eligible entities are reimbursed for costs to identify waste tire sites, conduct waste tire facilities inspections, investigate illegal tire disposal activities, review waste tire hauler documents, and issue Notices of Violation. They also ensure that tire dealers, auto dismantlers, tire haulers, and others comply with all applicable laws, storage standards, and manifest requirements. This program allows waste tire grantees to be reimbursed for time that they spend coordinating with a Local Conservation Corp to clean up small waste tire piles and illegally dumped waste tires.

   The program strives to provide consistent statewide inspection and enforcement coverage in a cost-effective and efficient manner. As a result of the program, local governments have an expanded role in the enforcement of these entities, thereby improving the protection of public health, safety, and the environment.

   Activity Funding
   FYs 2015/16-2019/20……..…….…….$7,000,000 per fiscal year

4. **Database System Maintenance and Enhancement:** The Waste Tire Management System (WTMS) tracks tire enforcement and manifest program activities. The system was developed per the requirements defined in the approved feasibility study report. The system tracks waste tire generators, registered haulers, permitted and unpermitted end use facilities, manifest forms, inspection forms, and enforcement actions.

   The system was initially released in July 2003 and has continued to meet requirements through continued maintenance and enhancement at an annual cost of $165,000 per fiscal year. Areas of ongoing maintenance and enhancement include:

   - Standard reports to track facility inspections, waste tire storage permits, grantee referrals, and Notices of Violation to ensure performance measures are achieved.
   - Ongoing enhancements to compliance reports that assist grantees with inspection prioritization and planning.
   - Ongoing maintenance that includes revising inspection forms and entering into contracts to have inspections forms and other documents scanned and entered into the database on an ongoing basis.

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- Additionally, periodic upgrades to the system are anticipated as the program continues to grow and change to meet the needs of our internal and external stakeholders as well as CalEPA reporting requirements.

Activity Funding
FYs 2015/16-2019/20…….....……$165,000 per fiscal year

5. **Tire Enforcement Inspector Technical Training:** These funds supplement the tire portion of CalRecycle's annual enforcement conference for local agencies and CalRecycle tire enforcement staff. Training provides inspectors and managers with up-to-date information on CalRecycle's waste tire management programs and grants, as well as a venue to network and discuss other items of interest. Other outreach activities may also be held during the year. This annual training event offers concurrent technical sessions, and field tours provide an opportunity to network with other local enforcement agencies, tire enforcement agencies, CalRecycle staff, and industry.

Activity Funding
FYs 2015/16-2019/20…….…….....$100,000 per fiscal year

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Waste and Used Tire Hauler Program and Manifest System

Hauler and Manifest Program Background and Status

The original waste tire manifest system was created in 1995 to provide documentation of waste tire transactions between the tire generator, tire hauler, and the end-use facility. A copy of the manifest form was left with each of the respective parties as proof of the tire transaction. The form was retained at the place of business for three years so it could be reviewed by staff or authorized representatives upon request. Unfortunately, since the information was not provided directly to CalRecycle, there was no simple way to track tire movement.

To better track the flow of waste and used tires in California, the Legislature passed SB 876 (Escutia, Chapter 838, Statutes of 2000), which required the development and implementation of a uniform statewide waste and used tire manifest program. The California Uniform Waste and Used Tire Manifest System developed pursuant to this law went into operation in July 2003. This legislation stated that every person who transported 10 or more waste or used tires would have to hold a valid tire hauler registration and use state-issued decals and manifests. Prior to obtaining registration, a prospective hauler would also be required to post a $10,000 bond. In addition, tire haulers would have to register annually with CalRecycle, possess manifests during the transport of waste or used tires, and transport only to legally authorized end-use facilities. Tire generators, haulers, and end use facilities all had to submit the completed manifest forms to CalRecycle. The law also required that a person who received waste or used tires from an unregistered hauler had to report that hauler to CalRecycle by providing the name, address, phone and license plate numbers of the unlicensed hauler, and the amount of tires being transported. The Tire Hauler and Manifest Program consisted of two separate components: registration and manifesting. Enforcement efforts against tire haulers resulted in significant fines summarized in the Enforcement Program element.

Currently, CalRecycle registers more than 1,440 California waste and used tire haulers and more than 7,500 vehicles. Registrations expire annually at the end of each calendar year. CalRecycle sends renewal packages to registered haulers well before the end of the year to ensure haulers can renew their registrations in a timely manner. Tire haulers who do not renew their registrations by the end of the calendar year are canceled.

Current law allows exemptions from waste tire hauler registration requirements under certain conditions, which include:

- Persons hauling fewer than 10 waste or used tires;
- Persons hauling using a government vehicle or persons employed by either local, state, or federal government and who are not hauling tires for hire;
- Persons hauling waste or used tires through the state without loading or unloading tires;
- Persons hauling waste or used tires for agricultural purposes, as defined in statute;
- Common carriers hauling waste or used tires on a back-haul;
- Haulers inadvertently carrying waste or used tires that are commingled with solid waste but are not economically feasible or safe to remove; and

- Persons who receive an exemption letter from the local enforcement agency (LEA) for a single haul to the landfills or permitted destination site.

Although the manifest system implemented in 2003 provided useful information on waste tire flow (including import and export data) and proved useful as an enforcement tool to investigate potential violations, the promise of a system to track waste tires from "cradle to grave" was not fully realized. The main problem encountered with this new manifest system was the voluminous amount of paperwork that was required, which prompted numerous complaints from the regulated community and strained CalRecycle's ability to compile and integrate the information.

Therefore, in 2004-2005, CalRecycle conducted workshops to gather input from stakeholders on how best to improve the system. Working closely with stakeholders, CalRecycle streamlined and simplified the original process for complying with the manifest program requirements. Staff developed a revised Comprehensive Trip Log form, which was adopted in February 2005. Utilizing this form, the tire hauler submits manifest information on behalf of all parties in the tire transaction, significantly reducing paperwork. During the first year of implementation, the total volume of paperwork was reduced by 71 percent; and in 2014, this percentage remains relatively the same. The revised form contains the same information as the previous manifest and trip log forms; however, it condenses this information onto a single form for reporting purposes.

The tire haulers have other non-paper alternatives for reporting manifest information. Haulers are now able to transmit tire manifest information electronically by using CalRecycle's electronic data transfer process. The expansion of electronic data transfers in 2006 resulted in additional program efficiency and cost-effectiveness as 46 percent of all manifest records were submitted electronically; in 2014, that percentage remained the same. Although there was no increase in electronic data submissions, the number of haulers utilizing this mode increased to 54; four are submitting data in batches and 50 are using the web-based mode.

As an additional program improvement, in 2007 CalRecycle approved implementation of a portable hand-held device pilot program to evaluate the feasibility of transmitting manifesting information via electronic data transmission from field personnel. Although this pilot program was not pursued beyond a feasibility study due to other program priorities, CalRecycle staff has worked with two large tire haulers who have shown an interest in this project. While CalRecycle is not funding the project at this time, this concept was well received as a more consistent and accurate reporting process. Currently, one large tire hauler has fully implemented this hand-held device and other large tire haulers continue to show interest in such devices.

Improvements in the efficiency and reliability of the manifest program have greatly contributed to and supported CalRecycle's enhanced enforcement. In 2008, the number of prosecutions of hauler manifest and registration violations, and the demands on CalRecycle's legal and program staff, required a more expeditious method for processing these violations. To this end, a six-month Streamlined Enforcement Pilot Program was approved by CalRecycle in April 2008 and fully implemented in July 2008. The streamlined enforcement process, modeled on similar protocols utilized by other state agencies, consists of a penalty letter sent to the violator informing them of the violations and giving two payment options: 1) pay a reduced penalty amount based upon pre-approved criteria and do not challenge CalRecycle allegations, or 2) contest the findings and have the case presented before an Administrative Law judge, at which time significantly higher penalties would be requested.

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If the violator decides to accept the reduced penalties, a Stipulated Decision and Order informing the violator of the allegations, the penalty amount, and their waiver of rights to an administrative hearing is signed by the responsible party and sent back with payment, and the decision is final.

The streamlined penalty letter process has been an overwhelming success in reducing enforcement-related costs and improving compliance and was approved as a permanent enforcement tool in 2009. To date, 460 penalty letters have been issued, of which 433 (94 percent) have been signed and returned with the Stipulated Decision and Order and payments. CalRecycle staff expanded this process for facility violators in 2014.

Direction Provided by SB 876

SB 876 mandated changes to the hauler and manifest program. In particular, it provides for a reform to the manifest system and the development of a new manifest form. SB 876 mandated the following:

1. "Close the loop" on accountability by requiring that copies of each manifest are returned to CalRecycle for monitoring.
2. Increase from four to nine the maximum number of waste and used tires that can be transported without having to obtain a waste tire hauler permit.
3. Provide for "one-time hauls" to support amnesty days and individual cleanup of small tire piles.
4. Enhance the manifest system and make the manifest available in electronic format, which would make it possible to submit information to CalRecycle electronically.
5. Change the placement of the decal from the driver's side door to the lower right-hand corner of the windshield.
6. Increase the penalties levied for waste and used tire hauling violations from $5,000 to $25,000.

Public Resources Code section 42961.5 requires all parties—waste tire generators, haulers, and end-use facilities—to participate in the "California Uniform Waste and Used Tire Manifest System." The tire hauler completes a Comprehensive Trip Log receipt for every pickup or delivery of waste or used tires. These receipts are reviewed and signed off by the facility operator, and a copy of the receipt is left at that place of business to retain for a period of three years. The hauler sends a copy of the completed form to CalRecycle and retains a copy for three years.

Objectives

The Hauler and Manifest Program has the following objectives:

1. To complement and support CalRecycle's waste tire enforcement program by providing comprehensive and auditable data on waste tire transactions between generators, haulers, and end-use facilities, thereby reinforcing compliance with SB 876 and the implementing regulations, and reducing the incidence of illegal waste tire disposal.
2. To provide information on tire movements within the state and across borders to help support tire diversion and market development activities.

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Performance Measures

The seventh edition of the Five-Year Plan contained five performance measures for the Hauler and Manifest Element, which are listed along with the attendant accomplishments for the previous fiscal year in Appendix A. The performance measures listed below have been updated to align with the activities listed in this Biennial Revision of the Five-Year Plan. The Hauler and Manifest Program will use the following measures to evaluate success in achieving its objectives:

1. Reduce the number of registered waste tire haulers that do not submit manifests to no more than 5 percent of the active tire haulers by December 2016.
2. Reduce the percentage of manifest form errors that are submitted by waste tire haulers to no more than 10 percent of the active tire haulers by December 2016.
3. Track the percentage of waste tire enforcement program cases for which the manifest system information has been used to assist CalRecycle staff and local enforcement agencies and report annually.
    a. Track the number of "204 Form" entries for which the end-use facility operators are required to report unregistered waste tire haulers transporting tires to their facilities as well as complaint forms received.
4. Track the number of penalties levied for violations of the PRC pertaining to waste and used tire hauling and report annually.
5. Determine the quantity of waste or used tires being picked up or delivered each year in California by December 2016.

Activity Description and Budget

The hauler and manifest program is a general budget line item as shown in Table 3. The budget supports printing and mailing of the Comprehensive Trip Log forms; training and educational materials; contracting with an outside source for data entry of the trip log forms; and CalRecycle's Information Technology Services Branch annual budget for manifest and hauler registration-related upkeep and maintenance of the WTMS database. Additionally, funds cover the cost of printing waste tire hauler decals and certificates and Tire Program Identification Number certificates.

Table 3: Budget for the Waste and Used Tire Hauler Program and Manifest System

Program Area	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Hauler Program and Manifest System	$450,000	$450,000	$450,000	$450,000	$450,000
Totals	**$450,000**	**$450,000**	**$450,000**	**$450,000**	**$450,000**

Hauler Program and Manifest System: With CalRecycle approval of the trip log form, the overall costs for the manifest program have been reduced as less printing, postage, and processing time is necessary. The numbers presented above in Table 3 adequately reflect this revision. Funds also will be allocated to the following project:

Waste Tire Hauler Portal: CalRecycle will continue development and expansion of its online waste tire hauler portal. This resource is designed to enable California's 1400-plus waste tire haulers to complete

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most activities associated with applying for and annually renewing their waste tire hauler registrations, as well as managing their business' hauler information within the WTMS database.

Activity Funding
FYs 2015/16–2019/20……..…..…$450,000 per fiscal year

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Cleanup, Abatement, or Other Remedial Actions Related to Tire Stockpiles Throughout the State

Cleanup Program Background and Status

The Cleanup Program consists of the following activities: 1) Short-Term Remediation Projects Program, 2) Local Conservation Corps Grant Program, 3) Local Government Waste Tire Cleanup Grant Program, 4) Local Government Waste Tire Amnesty Grant Program, 5) Emergency Reserve Account, and 6) Farm and Ranch Solid Waste Cleanup and Abatement Grant Program.

Since 1995, CalRecycle has removed more than 660,000 tons of illegal waste tires and contaminated debris from 78 sites at a total cost of more than $42 million. While the number of sites remediated each year has generally decreased since 1999, the cleanup costs have varied significantly depending on the number of large or complex projects undertaken in any year. In years 2007, 2010, and 2013 no waste tire sites were cleaned up. Therefore, no funds were expended.

Table 4: Tire Remediation Data for Short- and Long-Term Remediations

Year	Number of Sites	Tons of Tires Remediated	Remediation Cost
1995	6	21,544	$870,832
1996	6	4,114	$389,487
1997	9	28,329	$1,367,760
1998	8	43,565	$2,515,592
1999	15	11,867	$1,442,688
2000	6	46,029 [1]	$3,340,505
2001	1	36,209 [1]	$2,162,000
2002	2	214,417 [1]	$11,624,345
2003	1	27,707 [1]	$1,849,943
2004	1	148,833 [1]	$9,836,885
2005	10	72,941 [1]	$4,300,000
2006	2	1,285	$506,405
2007	0	0	$0
2008	2	881	$235,011
2009	5	1,628 [1, 2]	$1,536,161
2010	0	0	$0
2011	1	443	$177,700
2012	1	80 [2]	$599,494
2013	0	0	$0
2014	2	268	$250,000

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Year	Number of Sites	Tons of Tires Remediated	Remediation Cost
Totals	78	660,065	$42,984,808

[1] These totals include tons of contaminated debris removed.[2] Includes a joint project with the Short-Term Remediation Program and Solid Waste Cleanup Program in the Tijuana River Valley. See discussion in Cleanup Program Section of Appendix B.

The purpose of the Local Government Waste Tire Cleanup Grant Program is to provide funds to cities, counties, special districts, and qualifying Indian tribes for the cleanup of fewer than 5,000 tires per site illegally disposed along rights-of-way and on private property. For Fiscal Year 2014/15, eligible applicants could apply for up to $100,000 for individual grants and up to $250,000 for regional grants. Since 1997, CalRecycle has provided more than $11 million to fund 223 grants. Table 5 below summarizes the grant program.

Table 5: Local Government Waste Tire Cleanup Grant Program

Fiscal Year	Number of Grants	Amount Awarded
1997/98	8	$171,286
1998/99	4	$51,768
1999/00	6	$213,126
2000/01	0	*
2001/02	8	$449,889
2002/03	11	$646,260
2003/04	14	$712,286
2004/05	16	$735,511
2005/06	20	$778,044
2006/07	20	$845,867
2007/08	15	$790,923
2008/09	15	$834,943
2009/10	19	$1,027,855
2010/11	21	$1,081,559
2011/12	0	**
2012/13	23	1,723,223
2013/14	0	***
2014/15	23	1,715,882
Totals	223	**$11,778,422**

** No funds available—sunset of tire fee. **Grant program was suspended to transition to a two-year term. ***Funding was allocated (on an alternating-year basis) to the Local Government Waste Tire Amnesty Grant Program.*

The Local Government Waste Tire Amnesty Grant Program provides funds to cities, counties, special districts and qualifying Indian tribes to hold collection events in convenient locations for the public to bring in their waste tires for free. Since 1992, CalRecycle has provided more than $12 million in funding, awarding 432 grants. For Fiscal Year 2015/16, applicants are eligible to apply for a maximum of $40,000

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for single jurisdiction applicants and $100,000 for regional applicants. Table 6 summarizes the grant program.

Table 6: Local Government Waste Tire Amnesty Grant Program

Fiscal Year	Number of Grants	Amount Awarded
1992/93	4	$59,100
1993/94	8	$177,720
1994/95	13	$387,989
1995/96	1	$12,744
1998/99	16	$176,543
1999/00	26	$374,043
2000/01	0	*
2001/02	22	$330,817
2002/03	11	$321,247
2003/04	29	$924,674**
2004/05	17	$704,793
2005/06	31	$808,879
2006/07	33	$807,416
2007/08	43	$1,198,594
2008/09	40	$1,240,311
2009/10	43	$1,320,772
2010/11	43	$1,368,441
2011/12	0	***
2012/13	0	****
2013/14	52	$2,034,136
Totals	**432**	**$12,248,219**

** No funds available—sunset of tire fee. ** The number of applicants increased because no matching funds were required. ***Grant program was suspended to transition to a two-year term. ****Funding was allocated (on an alternating-year basis) to the Local Government Waste Tire Cleanup Grant Program.*

The FY 2014/15 Governor's Budget allocated $2.5 million to the Local Conservation Corps (LCCs) Grant Program from the tire fund, and $5 million will be allocated in subsequent fiscal years. CalRecycle is encouraging LCCs to assist jurisdictions with Cleanup/Amnesty grant events because leveraging these resources could potentially enable more jurisdictions to receive grants for this purpose.

The ways in which an applicant might coordinate with LCCs include, but are not limited to, assisting with planning or running an amnesty event, creating public education/advertising materials, and/or covering

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the cost of tire hauling. Costs covered by an LCC should be shown on the budget as a separate column as "in kind" and are not to be included in the cost per tire calculation.

Direction Provided by SB 876

Public Resources Code section 42889(b) provides that:

> *"These (Tire Recycling Management Fund) moneys shall be expended for … the following purposes:*
>
> > *(5) To pay the costs of cleanup, abatement, removal, or other remedial action related to tire stockpiles throughout the state, including all approved costs incurred by other public agencies involved in these activities by contract with the board. Not less than six million five hundred thousand dollars ($6,500,000) shall be expended by the board during each of the following fiscal years for this purpose: 2001-02 to 2006-07, inclusive.*
> >
> > *(9) To pay the costs to create and maintain an emergency reserve, which shall not exceed one million dollars ($1,000,000).*
> >
> > *(10) To pay the costs of cleanup, abatement, or other remedial action related to the disposal of waste tires in implementing and operating the Farm and Ranch Solid Waste Cleanup and Abatement Grant Program established pursuant to Chapter 2.5 (commencing with Section 48100) of Part 7."*

Objectives

The Cleanup Program has the following objectives:

1. Eliminate illegal waste tire stockpiles throughout California, either directly or through grant assistance, where the responsible parties have failed to take appropriate action.
2. Decrease illegal waste tire dumping by assisting local governments through grant funds in developing public education materials on proper maintenance and disposal of automobile tires and promoting waste tire amnesty events for the general public.
3. Assist victims of illegal dumping on farm and ranch properties in cleaning up waste tires.
4. Direct tires from cleanup to productive end use rather than landfill disposal to the greatest extent possible within reasonable cost parameters.

Performance Measures

The seventh edition of the Five-Year Plan contained two performance measures for the Cleanup Element; these are listed along with the attendant accomplishments for the previous fiscal year in Appendix A. The performance measures listed below have been updated to align with the activities listed in this Biennial Revision of the Five-Year Plan:

1. Complete the short-term waste tire remediation projects referred by the Enforcement Program in a timely manner and report status of projects to CalRecycle on an annual basis.

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2. Increase the number of sites remediated through Farm and Ranch Cleanup grants issued to local governments by 10 percent annually through 2016.

Activity Description and Budget

The cleanup program will continue to remediate sites with CalRecycle-managed contractors and grants to entities for cleanup of illegal piles. New for this edition is the inclusion of the Local Conservation Corps grant program. The Corps will assist local governments with cleanup and collection activities, which may eventually phase out the necessity for the Local Government Waste Tire Cleanup and Amnesty grant programs (this would necessitate CalRecycle working with the LCCs to support the availability of these services in areas of the State not traditionally serviced by LCCs). In addition, CalRecycle will continue to provide funding to the Farm and Ranch Solid Waste Cleanup and Abatement Grant Program to further mitigate future accumulations of waste tires. However, this program and CalRecycle's Solid Waste Cleanup grant program will be evaluated over the next few years to determine if it is more efficient to consolidate them into one cleanup grant program. Also, CalRecycle will establish an emergency reserve account, which cannot exceed $1 million, as directed by SB 876. Table 7 provides a list of activities and associated budgets for the element titled "Cleanup, Abatement, or Other Remedial Actions Related to Tire Stockpiles throughout the State."

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Table 7: Budget for Cleanup, Abatement, and Remedial Action

Program Area	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Short-Term Remediation Projects Including Emergency Reserve	$300,000	$300,000	$300,000	$300,000	$300,000
Local Conservation Corps Grant Program	$5,000,000	$5,000,000	$5,000,000	$5,000,000	$5,000,000
Local Government Waste Tire Cleanup Grant Program	$0	$1,800,000	$0	$1,600,000	$0
Local Government Waste Tire Amnesty Grant Program	$1,800,000	$0	$1,600,000	$0	$1,450,000
Emergency Reserve Account	$300,000	$300,000	$300,000	$300,000	$300,000
Farm and Ranch Solid Waste Cleanup and Abatement Grant Program*	$400,000	$400,000	$400,000	$400,000	$400,000
Totals	**$7,800,000**	**$7,800,000**	**$7,600,000**	**$7,600,000**	**$7,450,000**

** Funds transferred to Farm and Ranch Solid Waste Cleanup and Abatement Grant Program.*

1. **Short-Term Remediation Projects:** Public Resources Code (PRC) Section 42846 allows CalRecycle to perform any cleanup, abatement, or remedial work required to prevent substantial pollution, nuisance, or injury to public health and safety at waste tire sites where the responsible

parties have failed to take appropriate action. CalRecycle funds short-term remediation of illegal waste tire sites with CalRecycle-managed contracts, which may be used to stabilize piles until removal; remove all waste tires; and/or remediate the site after the tires have been removed.

Activity Funding
FYs 2015/16–2019/20……..……$300,000 per fiscal year

2. **Local Conservation Corps Grant Program:** The purpose of the grant program is to implement beverage container recycling and litter abatement programs, recycling activities related to the collection and recovery of used oil and electronic waste, and the cleanup and abatement of waste tires. Eligible applicants are Local Conservation Corps that are designated by a county to perform litter abatement, recycling, and related activities, and are certified by the California Conservation Corps as having operated for a minimum of two years and as meeting all other criteria of PRC section 14507.5 This program expends funding from the California Beverage Container Recycling Fund, Electronic Waste Recovery and Recycling Account, California Tire Recycling Management Fund, and California Used Oil Recycling Fund. Eligible activities may include cleanup events, education and outreach, event labor and staff resources in partnership with local jurisdictions, fleet support for local businesses and of governmental agencies, collection and hauling services (if permitted) and other projects allowed under PRC sections 17001(b)(3) and 42872. The LCCs will assist local governments with waste tire cleanup and collection activities; this may eventually phase out the necessity for the Local Government Waste Tire Cleanup and Amnesty grant programs, but for now CalRecycle is continuing those grant programs. CalRecycle will work with the LCCs to support the availability of these services in areas of the State not traditionally serviced by the LCCs.

   Activity Funding
   FYs 2015/16-2019/20……$5,000,000 per fiscal year

3. **Local Government Waste Tire Cleanup Grant Program:** This grant program is designed to pay for the cost of cleanup of illegally dumped waste tires. Funds are available for the collection, removal, transportation, recycling, and disposal of California waste tires from tire piles and areas where illegal dumping has occurred. Funds are limited to the removal of waste tires along public rights-of-way and on private property with either: (a) less than 500 tires on site, or (b) 500 to 4,999 tires if the property owner signs an affidavit stating that they did not bring the tires on site or allow others to bring the tires on site. Local governments including cities, counties, special districts, other political subdivisions and jurisdictions joined together by formal agreements, as well as qualifying Indian tribes, are eligible for funding. Cities or counties may submit a regional application with authorization from other cities and/or counties participating in the regional application. Priority will be given to applicants that demonstrate coordination with a Local Conservation Corps. Eligible costs for this coordination will be described the in Procedures and Requirements section of the Grant Agreement. *Note: This program could be phased out after 2018/19. If so, cleanup activities may be conducted by the LCCs. CalRecycle will work with the LCCs to support the availability of these services in areas of the State not traditionally serviced by the LCCs.*

   Activity Funding
   FY 2016/17……..$1,800,000
   FY 2018/19……..$1,600,000

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4. **Local Government Waste Tire Amnesty Grant Program:** This grant program is designed to help divert waste tires from landfill disposal and prevent illegal tire dumping. Funds pay for waste tire collection events that are held in convenient locations for the public to bring in their used tires at no charge. An amnesty event can also consist of a coupon program that allows citizens to bring in their tires on specified days. Amnesty events are not intended for the disposal of waste tires from waste tire generating businesses (PRC §42954(7)). Local governments including cities, counties, special districts, other political subdivisions and jurisdictions joined together by formal agreements, as well as qualifying Indian tribes, are eligible for funding. Cities or counties may submit a regional application with authorization from other cities and/or counties participating in the regional application. Priority will be given to applicants that demonstrate coordination with a Local Conservation Corps. Eligible costs for this coordination will be described in the Procedures and Requirements section of the Grant Agreement. *Note: This program could be phased out after FY 2019/20. If so, amnesty activities may be conducted by the LCCs. CalRecycle will work with the LCCs to support the availability of these services in areas of the State not traditionally serviced by the LCCs.*

   Activity Funding
   FY 2015/16……$1,800,000
   FY 2017/18……$1,600,000
   FY 2019/20……$1,450,000

5. **Emergency Reserve Account:** SB 876 required CalRecycle to create and maintain an emergency reserve account which shall not exceed $1 million. Funding for FYs 2015/16–2019/20 is proposed at $300,000. These funds will be used to respond to emergencies involving waste tires (e.g., tire fires). This emergency reserve account is subject to change depending on the need to fund cleanups for any emergencies that arise. While CalRecycle is required to maintain funds in this account with expenditure authority for emergency purposes, more than $1,000,000 may be expended on a yearly basis. If allocated funds are not expended, funds may be carried forward to the fund balance in the following fiscal year.

   Activity Funding
   FYs 2015/16–2019/20 ……$300,000 per fiscal year

6. **Farm and Ranch Solid Waste Cleanup and Abatement Grant Program:** The purpose of this grant program is to provide funding for the cleanup of illegal solid waste sites on farm or ranch property. A site may be eligible for funding if the parcel(s) is (are) zoned for agricultural use, unauthorized solid waste disposal has occurred, and the site(s) is (are) in need of cleanup in order to abate a nuisance or public health and safety threat and/or a threat to the environment. Tire piles can attract more dumping, so cleaning up these sites will help deter future illegal dumping of tires. SB 876 requires that transferred tire funds be allocated to pay the costs of cleanup, abatement, or other remedial action related to the illegal disposal of whole waste tires on farm or ranch properties. Other non-tire cleanup costs are paid for using other program funding sources.

   Activity Funding
   FYs 2015/16–2019/20 ……$400,000 per fiscal year

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Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires; and Market Development and New Technology Activities for Waste and Used Tires

Program Background and Status

In previous Five-Year Plans, CalRecycle separated research and market development activities into two different sections. In this edition, CalRecycle has combined them into one Research and Market Development Program because of the close relationship of the activities. In addition, CalRecycle has combined all research and technical support activities for tire-derived aggregate (TDA) into one line, and all research and technical assistance activities for rubberized asphalt concrete (RAC) into another line. CalRecycle also has included a new project to further address issues in the California-Mexico border region.

Research and Technical Support

Over the years, CalRecycle has investigated a variety of waste tire diversion alternatives through internally generated research contracts and literature searches of research worldwide. These efforts have helped CalRecycle focus on a mixture of strategies to divert the majority of waste tires from landfills. To date, projects involving TDA, RAC, energy recovery, molded rubber products, and other tire-derived product applications have been explored. So far, TDA and RAC uses have shown the greatest promise for diverting a significant portion of the millions of tires currently being landfilled. However, those two applications cannot by themselves divert all of the remaining landfilled tires. Therefore, CalRecycle continues to refine its knowledge of existing uses and products but will also investigate and research new and innovative applications.

<u>TDA Research</u>
Research efforts have enabled CalRecycle to make significant progress in the development of several long-term sustainable markets for TDA. These research efforts include the use of TDA as a vibration material in light rail applications, a lightweight fill material for embankment and landslide repair, civil engineering applications for use at landfills, and a gravel replacement in on-site wastewater treatment (OSWT) systems.

One of the most notable research efforts was a partnership with the Valley Transportation Authority (VTA) in San Jose to investigate the use of TDA as a vibration-damping material in its light-rail systems. VTA used 1,000 tons of TDA as vibration mitigation in its Vasona line expansion. Use of TDA saved VTA about $1,000,000. The success of this research project resulted in the use of TDA in the expansion of the light rail systems in both the Bay Area Rapid Transit (BART) and the Metropolitan Transportation Agency in Southern California.

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Use of TDA as a lightweight fill material was another example of a successful TDA research effort. CalRecycle partnered with Caltrans in the summer of 2001 to use TDA as lightweight fill material in the Dixon Landing embankment fill project. This pilot project was constructed by Caltrans at the Dixon Landing I-880 south on-ramp in Milpitas California. Use of TDA in this project allowed Caltrans to complete this project in a shorter time frame and achieve a significant cost savings. The success of this project allowed CalRecycle to partner with several other local governments to construct projects using TDA as a lightweight fill material. These partnerships included four projects with Mendocino, Sonoma, and Santa Barbara counties in which TDA was used as lightweight fill in landslide repair projects.

The use of TDA in landfill applications was another successful CalRecycle research effort. CalRecycle partnered with Sacramento County in the fall of 2009 to evaluate the use of TDA as a substitute for gravel in gas collection lines at Kiefer Landfill. In this project, which used about 60,000 tires, the gas collection line served the dual purpose of leachate injection and gas collection. As a result of this successful project, numerous landfills are now using TDA in their landfills. CalRecycle will continue to provide assistance for the use of TDA in landfills. CalRecycle will also study the surface emissions and lateral migration of landfill gas in landfills that use and/or dispose of large quantities of waste tires to determine effects on and overall performance of landfill monitoring and control systems.

A new area CalRecycle has researched is the use of TDA as a gravel replacement in on-site wastewater treatment (OSWT) systems. During June 2011, CalRecycle entered into a two-year contract with Humboldt State University to construct a field demonstration project that included one trench filled with conventional gravel and another with TDA. Results of the project indicate that the TDA performed at least as well as the gravel. Humboldt State also completed laboratory tests on TDA samples to determine engineering properties. CalRecycle anticipates using the results of this study to promote the use of TDA as an alternative to gravel in OSWT systems.

The success of these research projects has allowed CalRecycle to identify new engineering properties of TDA leading to applications that have created markets for waste tires. CalRecycle considers TDA to be one of the top-priority markets for waste tires diverted from landfills and will continue its TDA research activities in an effort to create long-term sustainable markets for TDA. Future research efforts could include further analysis of the seismic dampening properties of TDA for use in retaining walls and in mechanically stabilized TDA applications.

RAC Research

CalRecycle continues to make significant progress in promoting rubber paving applications such as RAC and rubber chip seals and, as a result, these uses continue to increase statewide. Research has played a key role in CalRecycle's efforts to increase the use of rubber paving applications. These research efforts include investigation of the use of rubberized recycled asphalt pavement (RAP) into new RAC pavement, the effectiveness of warm mix additives to rubber pavements, life cycle cost analysis, and the development of rubber pavement performance models.

In April 2014, CalRecycle contracted with the University of California Pavement Research Center to investigate the feasibility of incorporating RAP into new RAC pavements. Since Caltrans currently does not allow the use of RAP in new RAC pavements, this research project may ultimately support the development of new Caltrans specifications and lead to the use of more rubberized RAP into RAC pavements.

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Under contract with CalRecycle, the CSU, Chico Research Foundation completed two studies in May 2012; the first demonstrated the effectiveness of warm mix additives for rubberized asphalt application, which allows asphalt mixes to be batch-mixed at lower process temperatures; this research will support the use of RAC in colder climates and also reduce energy consumption. The second study evaluated the life cycle cost effectiveness of terminal blend, or mixed-in-place rubberized asphalts, to gain additional data supporting the superior performance of RAC as compared to conventional asphalt paving. The foundation also completed a study in May 2014 on rubberized asphalt concrete performance models that will help local agencies determine the best projects for using rubber paving applications.

As rubber paving applications continue to evolve and new applications emerge, CalRecycle will continue to study them to gain additional information regarding their benefits and drawbacks. If the ongoing research supports the benefits of these new applications, CalRecycle can then market and promote the use of these applications by including them in future grant offerings, with the aim of enhancing sustainable markets for additional waste tires. Additionally, CalRecycle staff will evaluate current design standards and investigate pavement preservation strategies that use rubber and increase the lifespan and performance benefits (e.g., resistance to reflective cracking, skid resistance, noise reduction) of pavements.

Tire-Derived Product Research

There is no one tire market that will divert all waste tires from California landfills, so CalRecycle will continue to conduct research in support of its efforts to promote existing tire-derived products as well as identify new ones. For example, with many of the existing products that CalRecycle currently supports coming to the end of their useful lives, there is a need to evaluate end-of-life options for various TDPs including turf applications and playgrounds. This may ensure that the tire rubber continues to be reused or recycled into new tire-derived products.

Also, with the recent concern regarding the use of tire rubber in artificial turf fields, CalRecycle will continue to assess any new information regarding the human health and environmental risks associated with this application. CalRecycle contracted with the Office of Environmental Health Hazard Assessment (OEHHA) to review previous scientific studies and conduct additional research on the health effects of crumb rubber in synthetic field turf; this report was published in 2010. CalRecycle is unaware of new findings based on scientific study that link significant health impacts to the use of recycled crumb rubber in synthetic turf. However, CalRecycle and OEHHA are developing a new interagency agreement, with the intent of having it in place by the end of fiscal year 2014/15, that would start with the findings and recommendations in the 2010 OEHHA report and entail additional sampling and testing of synthetic turf fields in the state. This new study will use reallocated funds from FY 2014/15 and funding in this Five-Year Plan for FYs 2015/16–2016/17; it is possible that more funding may be needed in the future for additional research, pending results from this new study.

CalRecycle may also do research on other non-highway related technologies that utilize waste tires to study and determine whether they are viable in the current tire market and if there are health and safety impacts that could adversely impact their use.

California-Mexico Border Region Project

While the majority of tires managed by CalRecycle are waste tires, each year a portion of the used tires generated in California are of sufficient quality to be reused within the state or exported abroad, primarily to Baja California. Eventually those used tires become waste tires. Based on information from the late 2000s, about two-thirds of waste tires in Baja California are diverted for use as tire-derived fuel for

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cement kilns or as construction material, but the remaining one-third are illegally disposed, some of which end up in the Tijuana River Valley. Waste tires are an environmental concern in the California-Mexico border region because of the threat they pose to riparian habitats, water contamination risks, and the public health implications associated with vector-borne disease.

CalRecycle has funded and engaged in a range of border-related activities over the past several years in response to the environmental problems associated with waste tires in the border region (see Appendix B). These include a 2009 tire flow study, California Highway Patrol surveillance work to identify legacy tire piles in the border region, two CalRecycle-managed cleanups of the Goat Canyon debris basins in Border Field State Park, a University of California Berkeley report on the development of an integrated waste management plan for the State of Baja California, and training for approximately 50 Mexican tire haulers regarding California's waste tire hauler registration and manifest program. Despite these efforts, the environmental problems associated with waste tires and much larger amounts of solid waste and sediment in the border region persist and continue to impact water quality in the Tijuana River estuary.

Pursuant to the Memorandum of Understanding entered into between California and Mexico (July 2014), CalRecycle worked with Mexico to identify potential strategies to assist Mexico in developing programs and programmatic infrastructure to address waste tires and solid waste in and around border communities. CalRecycle also continues to work with the California-Mexico Border Relations Council, established in 2006 as a coordinating body that collaborates on California-Mexico issues, and stakeholders on both sides of the border, including local governments and nonprofit organizations, to address waste tires and solid waste issues in the border region. The 2015 Budget Act's accompanying trailer bill (SB 83) creates further opportunities to address waste tires and solid waste issues in the border region by establishing the Border Region Solid Waste Working Group within the Council, broadening CalRecycle's planning responsibilities with regard to the border region, and authorizing funding for the Border Relations Council. In January 2016, the Border Relations Council awarded grants totaling $300,000 to two non-profit organizations (Wildcoast and the Sonoran Institute). These grantees are implementing border cleanup and prevention projects that establish cross-border partnerships and aim to develop long-term solutions for preventing solid waste and waste tires from ending up in sensitive habitats along the California-Mexico border region.

CalRecycle also used its Cleanup Program contractor to provide $18,000 in labor and materials to assist and support the Tijuana River Action Network (TRAN) in its implementation of the fall 2015 Tijuana River Action Month (TRAM) Volunteer Cleanup Activities to remove tires, brush, and waste materials from the Tijuana River Valley.

In continuing to address problems pertaining to waste tires in the border region and provide additional support for the Border Relations Council and its Regional Solid Waste Working Group, CalRecycle proposes a new set of waste tire cleanup activities along the border funded at a level of up to $500,000 (using funds from both FY 2015/16 and FY 2016/17). This includes a new contract with the San Diego State University Research Foundation on "The Flow of Used and Waste Tires on California-Mexico Border Region." The contract was executed on December 15, 2015. Key tasks include determining the ultimate disposition of all used tires that are being transported from California into Baja California; estimating the flow and number of used and waste tires transported into the border area of Baja California from California both legally and illegally since 2009; quantifying the collection, processing, manufacturing, brick and cement kiln, landfill infrastructure, and authorized engineering uses in Baja California that currently handles tires; describing changes in the used and waste tire management regulatory framework at the Mexican federal and state levels; and providing recommendations on

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potential policy and administrative changes. The contract includes participating in meetings with the California-Mexico Border Relations Council and holding at least two information-sharing workshops with CalRecycle and Baja California agency staff to facilitate understanding of the structure and function of government agencies relevant to tire flow and tire disposal.

In addition, CalRecycle continues work with CalEPA and its existing MOU with the Mexican government, along with other interested partners, to clarify and prioritize which projects (including targeted cleanup activities in the future) would best contribute to long-term environmental protection in the border region. Potential partners include the U.S. Environmental Protection Agency; specific CalEPA efforts such as the California-Mexico Border Relations Council (as described just above) and the California-Mexico MOU Working Group; the San Diego Regional Water Quality Control Board and the State Water Resources Control Board; the California Department of Parks and Recreation; and other governmental and/or non-governmental organizations identified through the California-Mexico Border Relations Council, such as the Tijuana River Valley Recovery Team. This new set of activities could also involve participation with the California Department of Parks and Recreation and the San Diego Regional Water Quality Control Board on current cleanup initiatives.

Market Development

CalRecycle continues to promote the development of long-term, sustainable markets for tire-derived products (TDPs) such as TDA, RAC, playground and sport surfacing, speed bumps, modulated flooring tile, or agricultural mats. The ultimate goal is to assure that the intrinsic value of waste tires as a commodity offsets the low cost of disposal for waste tires. Therefore, the continued objective for this revision of the Five-Year Plan is to develop solid markets for RAC, civil engineering applications, and other TDPs. A broad range of products will be required to make markets in California competitive and sustainable.

In the early years of implementing tire-related legislation, CalRecycle placed more emphasis on research and innovative product development. While research and pilot projects are still necessary to demonstrate the viability and marketability of various TDP applications, at some point products must be accepted into the marketplace based on real-world cost-effective applications. As recycled tire products become more accepted, CalRecycle expects to be able to reduce funding for some applications such as RAC. Once research is conducted on new products and uses, and barriers to their use are identified, CalRecycle may consider developing programs to promote these products as they move through the product stages.

At this time, CalRecycle will continue to focus its efforts on three fronts by:

1) Promoting the development of long-term, sustainable and diversified markets for TDPs;
2) Promoting the development of a long-term, sustainable supply infrastructure in California that efficiently and profitably produces high-quality raw material to meet market demand; and
3) Fostering knowledge transfer, technology, and product development to increase TDP demand and the supply that feeds it.

CalRecycle is addressing the first front through focused technical outreach and grant programs for RAC and TDA. These are focused primarily on local and state government end users of these products. Technical support to these end users is provided under TDA and RAC technical assistance contracts and

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the TDA Technology Centers. This support has been a key component in CalRecycle's effort to promote the use of RAC and TDA.

The Tire-Derived Product Business Assistance Program was specifically designed to address the second front by helping businesses to streamline operations, reduce production costs, improve marketing efforts, and diversify product lines. The assistance program helped businesses improve their ability to operate on a sustainable basis and manufacture products without the need for ongoing long-term assistance. While these programs were designed to deal with the short- to medium-term financial and technical business needs necessary to establish sustainable markets, this targeted assistance was eventually phased out. However, as new products and fledging industries emerge, CalRecycle will develop programs accordingly.

CalRecycle will address the third front by expanding education, training, and outreach opportunities on top-priority market expansion opportunities and also by identifying and addressing barriers to those market opportunities. Although there are differences in the three market development efforts mentioned above (i.e., technical assistance, outreach, and education activities), CalRecycle will coordinate them to make efficient use of available resources, create opportunities for long-term sustainable markets, and increase the number of waste tires diverted from landfills for the following markets: TDA, RAC, and other TDPs.

<u>TDA Market Development</u>
Through the successful completion of research and demonstration efforts in the last few years, CalRecycle considers TDA a cost-effective and reliable alternative to lightweight fill materials. TDA projects indicate that great market potential exists for using large quantities of waste tires. As such, CalRecycle has progressively promoted its use for civil engineering applications by providing funds for the TDA Grant Program that started in 2012.

For example, CalRecycle has promoted the use of TDA in various civil engineering applications, including several highway projects with the California Department of Transportation (Caltrans) in which shredded tires were used as lightweight fill. The first project was completed in August 2001. The most recent project, completed in 2009, involved realigning U.S. 101 at Confusion Hill in Mendocino County and used 270,000 tires. Prompted by the success of these projects, Caltrans has accepted TDA as a viable lightweight construction material, which prompted Caltrans to issue a letter to its district directors stating that the use of tire shreds has proven to be an economically feasible alternative where conditions warrant the use of lightweight fill.

<u>RAC Market Development</u>
Over the years, CalRecycle has provided support to local agencies for RAC and rubberized chip seal projects. Through the Rubberized Pavement Grant Program, scores of new paving projects have either been completed or are being planned in California. When compared to conventional asphalt, RAC saves money, provides greater skid resistance, is quieter, and lasts longer than conventional asphalt. CalRecycle has successfully promoted the product's benefits through workshops, conferences, the RAC technical centers, and other outreach efforts.

Focused technical outreach and education, along with grant programs, have considerably increased the use of RAC, and dozens of local governments are using it for paving projects. The City of Thousand Oaks has paved hundreds of lane miles with RAC, using more than 1 million waste tires. Sacramento, San Diego, and Los Angeles counties are following suit. One of the primary focuses of CalRecycle's outreach

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campaigns is to promote environmentally preferable products for the state, including RAC where it has not been used. As the number of first-time users diminishes, the emphasis will shift to encouraging local jurisdictions to expand their existing use of asphalt-alternative products. CalRecycle continues to promote several other transportation-based products, such as terminal blend asphalt rubber, warm mix, and rubberized chip seals.

Other TDP Market Development

In order to have a long-term, sustainable strategy for recycled waste tires, there must be diversification of end-use markets. In addition to civil engineering applications (rubberized pavement and tire-derived aggregate), CalRecycle also supports various TDPs such as rubber mulch and molded products. Rubber mulch is used as a loose-fill material in playgrounds and in landscape applications. Crumb rubber and truck tire buffings are used in pour-in-place playgrounds (often with a very colorful and sponge-like surface).

Crumb rubber is also used in playground tiles, running tracks, and synthetic turf fields. Molded products use crumb rubber and include various types of mats, flooring, underlayment, sidewalk and garden tiles, bases for various traffic devices, and many other uses. Many of these products are purchased by local governments and school districts using financial assistance provided by the Tire-Derived Product Grant Program.

To further stimulate the market, CalRecycle will continue the competitive pilot Tire Incentive Program (TIP) by targeting the expansion of commercial demand for higher value-added products using crumb rubber from California-generated waste tires. The TIP provides a reimbursement (as an incentive payment program) to eligible businesses that use recycled crumb rubber in eligible products or substitute recycled crumb rubber for virgin rubber, plastic, or other raw materials in products. The program will enable participating manufacturers to increase TDP sales by more competitively pricing and marketing their products. This program started in 2014 and will be continuously evaluated for effectiveness and efficiency.

In order to track the progress of the success of CalRecycle's market development efforts, CalRecycle publishes the California Tire Market Report each year and provides information on the waste tire diversion rate, market trends, and supply and demand balance. These reports can be found in CalRecycle's Publications Catalog at http://www.calrecycle.ca.gov/Publications/Detail.aspx?PublicationID=1503

Direction Provided by SB 876

SB 876 includes legislative intent language as follows (from 2000 uncodified law, SB 876):

> *"(g) The purpose of this act is to do all of the following: … (2) Encourage tire manufacturers to promote the use of retreaded and longer-lasting tires, as well as develop recycled-content rubber tires."*

Public Resources Code section 42889(b) states:

> *"The remaining moneys collected pursuant to Section 52885 shall be used to fund the waste tire program, and shall be appropriated to the board in the annual Budget Act … [and] shall be expended … for the following purposes: …*

5) To make studies and conduct research directed at promoting and developing alternatives to the landfill disposal of waste tires."…

(7) To assist in developing markets and new technologies for used tires and waste tires. The board's expenditure of funds for purposes of this subdivision shall reflect the priorities for waste management practices specified in subdivision (a) of PRC Section 40051."

Objectives

The research and market development element has the following objectives:

1. Conduct research and establish programs that support and promote new technology, new uses for waste tires, and improvements to products that use California-generated waste tires.
2. Identify research gaps in existing data and determine what areas need further investigation.
3. Increase the use of RAC and TDA applications by providing funds and technical assistance to State agencies and local governments.
4. Increase the purchase of TDPs (Not RAC or TDA) by providing services and funding to State and local agencies to offset costs and promote sustainable purchase practices.
5. Increase the production capability and cost-effectiveness of processing waste tires into value-added products by offering businesses incentives.

Performance Measures

The seventh edition of the Five-Year Plan contained one performance measure for the Research Element and another eight for the Market Element, which are listed in Appendix A along with related accomplishments for the previous fiscal year. The performance measures listed below have been updated to align with the activities listed in this Biennial Revision of the Five-Year Plan.

1) Identify critical research gaps, such as issues related to health exposure, environmental impacts, market barriers, etc.; complete research projects to address these issues; and incorporate research findings in education, marketing, and outreach materials.

2) Increase the percentage of waste tires diverted from landfill disposal to 90 percent by 2015.

3) Increase the amount (tons) of waste tires used in priority market segments, including RAC, molded and extruded products, civil engineering (transportation), etc.

4) Increase the number of state agencies that are contacted regarding procurement of priority products or uses and those that subsequently purchase such products or employ such uses.

5) Increase the purchase of tire-derived products by local jurisdictions (measured in tons and broken out by rubberized asphalt concrete, tire-derived aggregate, and other tire-derived products).

6) Reduce the number of waste tires generated in California from 1.1 to 0.9 per person per year by 2015.

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7) Reduce the annual average of dollars awarded per Passenger Tire Equivalent diverted within individual grant programs: Rubberized Pavement Grant Program, Tire-Derived Product Grant Program, and Tire-Derived Aggregate Grant Program, over a five-year period (2011-2016).

8) Increase regional capacity to produce chipped and shredded tire-derived aggregate for civil engineering projects.

9) Increase in-state production and use of finer-ground rubber (≤ 50 mesh) for production of molded and extruded products.

Activity Description and Budget

CalRecycle is proposing decreasing funding for TDA and RAC research and technical support; new funding in support of Caltrans specifications development; research on end-of-life issues for tire-derived products; and research on landfill emissions. This will continue CalRecycle's focus on rubberized asphalt concrete, tire-derived aggregate, and other tire-derived products that use the largest number of tires. Since the largest number of tires can be diverted through RAC and TDA applications, significantly more resources are being devoted to them. At the same time, due to a very low response rate in the first two cycles of the TDA grant program, CalRecycle is proposing reducing funding for the program; over the long term, it could be replaced if the broader incentive approach outlined in the Vision section is implemented by the Legislature. Table 9 provides this element's budget.

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Table 9: Budget for Research and Market Development Activities

Program Area	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Tire-Derived Aggregate Civil Engineering Technical Support; Research Efforts; Technology Center and Laboratory Testing Services	$400,000	$950,000	$950,000	$500,000	$950,000
Rubberized Asphalt Concrete Technical Support and Research	$500,000	$650,000	$200,000	$650,000	$650,000
Caltrans PG+5 Binder Project	$400,000	$350,000	$0	$0	$0
Research on TDPs and Non-Highway Technologies Using Waste Tires	$0	$0	$526,000	$526,000	$226,000
Research on Landfill Emissions	$101,000	$149,000	$250,000	$0	$0
Research on Recycled Tire Rubber in Turf Fields	$200,000	$200,000	$0	$0	$0
Border Tire Flow Study	$250,000	$250,000	$0	$0	$0
California-Mexico Border Relations Council*	$300,000	$0	$0	$0	$0
Tire-Derived Aggregate Grant Program	$600,360	$800,000	$850,000	$850,000	$850,000
Rubberized Pavement Grant Program	$7,550,000	$7,252,000	$7,750,000	$8,000,000	$3,000,000
Tire Incentive Program and Tire-Derived Products Grant Program	$4,125,000	$3,725,000	$4,000,000	$4,000,000	$4,000,000
Tire Outreach and Market Analysis	$499,640	$300,000	$300,000	$300,000	$300,000
Tire Events	$75,000	$75,000	$75,000	$75,000	$75,000
Totals	**$15,001,000**	**$14,701,000**	**$14,901,000**	**$14,901,000**	**$10,051,000**

* Funds appropriated to the California Environmental Protection Agency to support the California-Mexico Border Relations Council.

1. **Tire-Derived Aggregate (TDA) Civil Engineering Technical Support; Research Efforts; and Technology Center and Laboratory Testing Services:** CalRecycle will continue to provide technical support and education to TDA grantees using a technical assistance contract component. This technical support also may address issues associated with the use of TDA in civil engineering projects. Typical projects may include applications such as lightweight fill, landfill applications, retaining walls, vibration-damping layers in rail transit projects, and the development of mechanically stabilized TDA designs. Funding these efforts fluctuates due to the funding for TDA technical support contracts. A baseline funding of $400,000 for the first year and then $500,000 for the next four years are for the Technology Center and laboratory testing services. This is augmented with funding for the technical support contracts, which are funded for two consecutive fiscal years (FYs 2016/17 and 2017/18) followed by a year without funding (FY 2018/19).

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- **Tire-Derived Aggregate Civil Engineering Technical Support:** The technical support component will promote the use of TDA through a technical marketing and education outreach plan. This will be accomplished by the technical assistance contractor through video documentation and by assisting the Office of Public Affairs in the coordination of media events of TDA demonstration projects. The technical assistance contractor also will develop technology transfer materials that showcase the performance and cost benefits of using TDA. The technical assistance contractor will present these materials and serve as a CalRecycle liaison at various key stakeholder group workshops and conferences.

- **TDA Research Efforts:** Under this activity, CalRecycle will continue to investigate new civil engineering uses for waste tires, including partnering with state, local, and private-sector engineers to conduct research and to train and educate them on the use of TDA in these projects. For research projects focusing on specific civil engineering uses of waste tires, project-specific contracts may be implemented. These projects could include, but are not limited to, erosion control, earthquake damping, vibration mitigation, retaining and sound walls, storm water runoff/drainage control, and septic tank leach field applications. Listed below are several TDA research proposals and estimated costs that CalRecycle would consider funding as project concepts mature:
  - Research project to investigate the feasibility of using TDA in a mechanically stabilized earth (MSE) application. These applications are used to repair roads that have been damaged by landslides and typically use geo-grids in compacted soil to provide additional strength. However, instead of using soil, this project would analyze the use of TDA to take advantage of its stability and lightweight properties. The project would include conducting slope stability analysis of a MSE-TDA design and obtaining any additional material properties needed to conduct the analysis. Estimated cost of this project is $300,000.
  - Pilot project in partnership with Santa Barbara County to demonstrate the feasibility of using TDA in an MSE-TDA application. The proposed project will repair and relocate a section of road on a steep hillside. Estimated cost of this project is $450,000.

- **Tire-Derived Aggregate Technology Center and Laboratory Testing Services:** CalRecycle will continue its technical outreach efforts by continuing its contract with a contractor that has knowledge and experience with using TDA and RAC in California. Through the TDA Technology Center, the contractor will provide statewide technical assistance to local governments through direct consultation and presentations at local and regional workshops. To assure compliance with material specifications, the contractor will also provide validation testing services in support of CalRecycle RAC and TDA projects. The contractor will also continue to provide curriculum development support to California universities to educate the next generation of engineers on the benefits of using TDA.

Activity Funding
FY 2015/16 ..……..….. ..……..$400,000
FYs 2016/17–2017/18 and 2019/20..…….….. $950,000 per fiscal year
FY 2018/19……...$500,000

2. **Rubberized Asphalt Concrete (RAC) Technical Support and Research:** The success of CalRecycle's RAC programs has been due in part to the technical support that has been provided through CalRecycle's RAC technical assistance contract. The contractor will continue to provide technical support and education to local government agencies, grantees, and CalRecycle under a new

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technical assistance contract. This technical support may address issues associated with roadway projects, including rubber hot-mix, rubber chip seal, rubber cape seals, and other emerging paving applications that use tire-derived materials that have been determined by CalRecycle to have benefits derived from the use of scrap tires. The technical assistance contractor will also serve as the liaison at various stakeholder workshops and conferences that will help promote RAC programs. Funding for the RAC technical support contract is provided for two consecutive fiscal years (FYs 2015/16 and 2016/17; FYs 2018/19 and 2019/20), with each two-year period followed by a year without funding (FY 2017/18). This is because the terms of the contracts are two years and they are awarded every three years. A baseline funding of $200,000 for all years is for research.

- **RAC Technical Support:** The technical assistance contractor will also assist CalRecycle with marketing and promoting the use of RAC. This will be accomplished through the development and distribution of technology transfer materials that showcase the benefits of using RAC and presentation of these materials at key stakeholder workshops and conferences. The contractor provides technical assistance and training to RAC grantees to assure that their projects are successful. To date, the contractor has conducted training sessions to more than 300 local government entities. The contractor will also assist CalRecycle in implementing a cooperative purchasing program to address obstacles to wider and continued, sustainable use of RAC by local agencies. Local government agencies that typically have smaller paving projects due to budgetary issues or lack of proximity to RAC manufacturing facilities will benefit from the cost savings provided by a cooperative purchase project. Through this program, the contractor will coordinate the participating agency projects and may provide design assistance, specification review, bidding/procurement, construction management, quality assurance, and quality control, as necessary. In addition, the contractor will provide training to each participating agency so that they can carry out future cooperative purchases on their own.

- **RAC Research:** Under this activity CalRecycle will continue to conduct research of rubber paving applications in support of its efforts to promote its use. Listed below are several RAC research proposals under consideration:
    - Further research on developing performance curves for asphalt rubber and terminal blend chip seals for use in pavement management systems used by Caltrans and local agencies. Pavement management systems are used as a decision-making tool for identifying the appropriate maintenance or rehabilitation strategy for their pavement projects. Since many of these current management systems use performance curves only for conventional pavement, local agencies may not select a rubber paving strategy. This proposed research project will generate performance curves for both asphalt rubber and terminal blend chip seal projects. This research project would be a continuation of a previous research project under which performance curves were developed for asphalt rubber, terminal blend, and rubberized warm mix asphalt materials for use in the pavement management system. Estimated cost of this project is $350,000.
    - Research in support of the Caltrans PG+5 binder project that is described in Activity 3 below.

Activity Funding
FY 2015/16…….……..$500,000
FY 2016/17 and FYs 2018/19–2019/20…….…….….$650,000 per fiscal year
FY 2017/18……...$200,000

3. **Caltrans PG+5 Binder Project:** Caltrans is in the process of developing a PG+5 binder proposal that would require the use of a minimum of 5 percent crumb rubber in all asphalt binder that is currently classified as unmodified. CalRecycle would partner with Caltrans to identify a series of research proposals to support the implementation its PG+5 proposal. For example, these research proposals would potentially investigate the performance of the new PG+5 binder as compared to unmodified binders containing no rubber. The research could also investigate the performance and any potential impacts to the current rubber pavement technologies (i.e., field-blended asphalt rubber and terminal blend). Estimated cost of this research project is $750,000.

   Activity Funding
   FY 2015/16…….. $400,000
   FY 2016/17……$350,000

4. **Research on TDPs and Non-Highway Technologies Using Waste Tires:** CalRecycle will continue to investigate TDPs and non-highway-related technologies that utilize waste tires to study and determine whether they are viable in the current tire market and if there are health and safety impacts that could adversely impact their use. Some of these applications may include identification of end-of-life options for various TDPs including turf applications and playgrounds; assessing the feasibility of using crumb rubber in molded, extruded, and other products; and assessing market opportunities for waste tire residual fluff. To conduct this research, CalRecycle would partner with universities, state agencies, and the U.S. Environmental Protection Agency when appropriate.

   Activity Funding
   FYs 2017/18–2018/19 ..... …….. $526,000 per fiscal year
   FY 2019/20..... …….. $226,000

5. **Research on Landfill Emissions:** Many landfills use shredded tires as daily cover and in landfill gas collection systems, and/or dispose of significant amounts of altered tires along with municipal solid waste. Layers of tires in the waste mass may have an impact on landfill gas movement within, and external to, the waste mass. CalRecycle will study the surface emissions and lateral migration of landfill gas in landfills that use and/or dispose of large quantities of waste tires to determine effects on and overall performance of landfill monitoring and control systems. For comparative purposes, the emissions from representative landfills that do not use and/or dispose of significant amounts of waste tires will also be studied.

   Activity Funding
   FY 2015/16 …….…….….. $101,000
   FY 2016/17……..…….….. $149,000
   FY 2017/18…….…….$250,000

6. **Research on Recycled Tire Rubber in Turf Fields:** In this agreement, OEHHA will conduct a series of scientific studies designed to further the understanding of the chemicals that can be released from recycled tire rubber under various environmental conditions, human exposures to these chemicals, and the associated chemical hazards and risks to human health. Based on input from experts and the public, and review of the pertinent literature, OEHHA will conduct the following tasks:
   A) Expert and stakeholder input and consultation: Convene an advisory panel of experts to provide advice on study design and implementation, and hold one or more public meetings to

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engage the public and stakeholders in the study process. Consult with other departments in state government and the U.S. EPA on the design and conduct of the study.

B) Hazard analysis: Identify the hazards to human health of the chemicals that may be found in synthetic turf.

C) Exposure scenario development: Characterize the exposure pathways, routes, and activities leading to various levels of human exposure experienced on artificial turf.

D) Sampling and analysis of new and in-field artificial turf: Develop protocols and collect samples of and perform laboratory tests on:
   - new tire crumb and artificial grass blades from synthetic turf that has not been installed,
   - in-the-field samples of recycled tire crumb and artificial grass blades, from fields of various ages and from different geographic locations, and
   - air above indoor and outdoor synthetic turf fields.

   Extraction methods will simulate conditions of human oral, dermal, and inhalation contact with materials.

E) Biomonitoring study protocol development: Develop protocols for obtaining samples of biological fluids from and exposure monitoring of children and adults who play on artificial turf.

F) Preparation of a draft report presenting the data collected throughout the project as well as conclusions and a discussion regarding the findings. Present the draft report at a public meeting to solicit input from the public as well as a panel of experts, followed by revision of the draft report and submission of a final report.

This study will span a three year period and total $2,858,000. In FY 2014/15 $2,458,000 was approved for this study. An additional $200,000 in FYs 2015/16–2016/17 has been allocated.

Activity Funding
FYs 2015/16–2016/17…….$200,000 per fiscal year

7. **Border Tire Flow Study:** The Border Tire Flow Study would 1) better define the problem by obtaining updated information on how and where used and waste tires are being transported and stored (including in tire piles) along the border region and on associated economic aspects; and 2) work with CalEPA and its existing MOU with the Mexican government, along with other interested partners, to clarify and prioritize which projects (including targeted cleanup activities in the future) would best contribute to long-term environmental protection in the border region. Potential partners include the U.S. Environmental Protection Agency; specific CalEPA efforts such as the California-Mexico Border Relations Council and the California-Mexico MOU Working Group; the San Diego Regional Water Quality Control Board and the State Water Resources Control Board; and the California Department of Parks and Recreation. This new set of activities could also involve participation with the California Department of Parks and Recreation and the San Diego Regional Water Quality Control Board on current cleanup initiatives.

Activity Funding
FYs 2015/16–2016/17…….. $250,000 per fiscal year

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8. **California-Mexico Border Relations Council:** Senate Bill 83 (Committee on Budget and Fiscal Review, Chapter 24, Statutes of 2015) appropriates $300,000 from the Tire Recycling Management Fund to the California Environmental Protection Agency to support the California-Mexico Border Relations Council. The bill requires the Council to: 1) establish a Border Region Solid Waste Working Group to develop and coordinate long-term solutions to address and remediate problems associated with waste tires, solid waste, and excessive sedimentation along the border that result in degraded valuable estuarine and riparian habitats, and threaten water quality and public health in California; 2) develop a waste tire abatement plan, which may also provide for the abatement of solid waste, with appropriate government entities of California and Mexico, and 3) identify and recommend to the Legislature changes in law necessary to achieve these goals. The bill also clarifies that activities include the development of projects in Mexico in the California-Mexico border region that address the movement of used tires from California to Mexico, and support the cleanup of illegally disposed waste tires and solid waste along the border that could negatively impact California's environment.

   Activity Funding
   FY 2015/16…….…….$300,000

9. **Tire-Derived Aggregate Grant Program:** The program provides funding to local governments, special districts, joint powers authorities, State agencies (including offices, departments, bureaus, and boards), California-based private, for-profit entities, and qualifying California Indian tribes for civil engineering projects utilizing TDA. To be eligible for the grants, projects must use TDA in one of a variety of approved civil engineering applications.

   Activity Funding
   FY 2015/16…….…….. $600,360
   FY 2016/17……..…$800,000
   FYs 2017/18–2019/20……... $850,000 per fiscal year

10. **Rubberized Pavement Grant Program:** This program will continue to be offered to cities, counties and qualifying California Indian tribes that fund public works projects located in California. The program is designed to help create long-term sustainable markets by focusing on first-time and limited-experience users of rubberized paving. This may include grants and incentives to further the purposes of the program.

    Activity Funding
    FY 2015/16……..……..……..…$7,550,000
    FY 2016/17……..$7,252,000
    FY 2017/18 …….$7,750,000
    FY 2018/19……..$8,000,000
    FY 2019/20……..$3,000,000

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11. **Tire Incentive Program and Tire-Derived Product Grant Program:** Both the Tire Incentive Program (TIP) and the Tire-Derived Product (TDP) Grant Programs are designed to increase demand for TDPs.

- **Tire Incentive Program:** This competitive pilot incentive program is aimed at expanding commercial (business) demand for higher value-added products using crumb rubber from California-generated waste tires. Emphasis will be on products that have not benefited from the TDP Grant Program. Incentives will be targeted to three product types: existing tire-derived products, feedstock conversion, and use of fine (<50) mesh material. A general cost incentive is also available for eligible manufacturers. The incentive can be used for a number of costs, such as transportation, production, product development, testing and certification, marketing, or selling expenses.

  Examples of possible eligible products include, but are not limited to: flooring underlayment, rubberized flooring, conveyer belts, calendared or compounded rubber, agricultural harvesting devices, various landscaping and garden products, various building products, various traffic devices, spacers, fencing, asphalt products (that are not eligible under other CalRecycle programs), paintings, coatings, etc. Asphalt products must contain a minimum of 5 percent crumb rubber in the binder or flux.

  To encourage and support business and product success, CalRecycle will provide subsequent funding for specific products, gradually reducing the incentive to maintain appropriate support while ensuring the program serves as a sustainable market development tool. The program will be continuously evaluated for effectiveness and efficiency with CalRecycle making adjustments as appropriate.

- **Tire-Derived Products Grant Program:** This program and its predecessors have successfully increased demand for TDPs, especially with local governments and school districts. It has also encouraged the appropriate substitution of recycled rubber for virgin rubber (also known as feedstock conversion). Typical TDPs include landscaping and playground loose-fill mulch, playground tiles, crumb rubber infill for all-weather sports surfacing, rubberized sidewalks and tree wells, floor and agricultural mats, and sports tracks.

Activity Funding
FY 2015/16 ……..…….$4,125,000
FY 2016/17……$3,725,000
FYs 2017/18–2019/20……..……..……..$4,000,000 per fiscal year

12. **Tire Outreach and Market Analysis:** This program is intended to document market trends and conduct focused technical outreach to public and private procurement entities to increase demand and expand the use of waste tire-derived material in a variety of applications including higher value-added products. Staff and an independent contractor will provide:

- An annual in-depth survey and analysis of the waste tire and TDP markets in California and the associated *California Waste Tire Market Report*. This effort consists of a market analysis study to assess the market for California waste tires and influencing factors in the market, including

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providing information on the waste tire diversion rate, market trends, supply/demand balance and capacity, and other relevant market analyses. The analysis will culminate with the annual publication of the *California Waste Tire Market Report*.

- Focused technical outreach and education targeted at stakeholders such as federal, state, and local governments, school districts, and private entities that are in a position to procure tire-derived products and/or have the authority to specify them in future projects. The goal of this effort is to increase demand for TDPs, foster the application of new technologies, and expand the use of waste tire-derived material into a variety of applications, including higher value-added products. This includes monitoring and measuring the outcome of these efforts; developing case studies; conducting meetings, trainings, and webinars to targeted stakeholders (including two CalRecycle tire conferences); and maintaining and updating outreach and education materials.

- Identify end-of-life best management practices and markets for synthetic turf, infill, playground fill, and other TDPs.

- Research and testing to address identified gaps in TDP product data and specifications that pose a barrier to TDP market expansion.

Annually $150,000 will be spent on focused outreach, education, and promotion, and $150,000 will be spent on the market analysis.

Activity Funding
FY 2015/16……..……..$499,640
FYs 2016/17–2019/20……..……..$300,000 per fiscal year

13. **Tire Events:** CalRecycle will continue to hold tire workshops, forums, and/or trainings, as it has in past years. These tire business/product events will provide attendees with up-to-date information about waste tire management programs. They provide a venue to discuss all aspects of waste tire management, including hauling, manifests, cleanup, proper disposal, recycling technologies, and research and market development activities. These events also offer a venue for staff and stakeholders to meet and focus on issues of common concern. Wherever possible, events will be conducted in conjunction with related events organized by organizations such as the League of California Cities, California Public Works Association, and California State Association of Counties. In addition, staff has combined the tire and used oil/household hazardous waste annual conference and the Recycling Market Development Zone conferences and training workshops into one combined three-year contract to provide efficiencies of scale and other benefits**.** All events also will be coordinated with CalRecycle's Office of Public Affairs.

Activity Funding
FYs 2015/16–2019/20……..$75,000 per fiscal year

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Administrative Costs

Program Staffing

Tire-related activities are performed by a total of 74.96 positions within CalRecycle. The cost of staffing is approximately $8.4 million.

Activity Funding
FYs 2015/16–2019/20……...…$8,427,000 per fiscal year*
**Staffing costs are estimates only, due to the unpredictability of costs for personnel services.*

Administration

Administration refers to the accounting of central management costs such as those pertaining to executive management, accounting, human resources, grants, business services, employee health and safety, small-office support, and statewide pro rata assessments (pro rata is the sharing of central service costs as mentioned in the State Administrative Manual, Section 8753, that generally serve all of CalRecycle, i.e., indirect or overhead costs, by funds other than the General Fund). Administration funding represents the distribution of these "indirect costs" to direct CalRecycle program activities that include the tire program.

Activity Funding
FYs 2015/16–2019/20.....$4,243,000 per fiscal year*
**Administrative costs are estimates only, due to the unpredictability of costs for personnel services.*

Mandatory Contracts

Mandatory contracts include allocations for the following: Attorney General's Office, Board of Equalization, Department of Finance, Foundation of California Community Colleges, and the Governor's Office of Planning and Research.

Activity Funding
FYs 2015/16–2019/20.....$1,258,000 per fiscal year*
**Estimate of costs for mandatory contracts*

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Appendix A: Accomplishments Based on Performance Measures from the July 2013 Five-Year Plan

This section contains performance measures from the *Five-Year Plan for the Waste Tire Recycling Management Program (Seventh Edition Covering Fiscal Years 2013/14–2017/18)*, dated July 2013, with accomplishments reported after each performance measure. Data collected is for Fiscal Year 2013/14 unless specified.

Enforcement and Regulations Relating to the Storage of Waste and Used Tires

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The enforcement program will use the following measures to evaluate success in achieving its objectives:

1. **Inspections:**
   a. Inspect all active major and minor permitted facilities at least once every fiscal year.

   As of June 30, 2014, there were 43 active permitted facilities, and 37 (86 percent) of them were inspected during the 2013/14 fiscal year.

   b. Inspect all active registered haulers at least once every two fiscal years.

   As of June 30, 2014, there were 1,598 active haulers, and 834 (52 percent) of them were inspected during the 2013/14 fiscal year.

   c. Inspect all active generators at least once every three fiscal years.

   As of June 30, 2014, there were 28,652 active generators, and 14,052 (49 percent) of them were inspected during the 2013/14 fiscal year.

   d. Monitor the results of inspections by compiling comparative annual data of the number of inspections performed, Notices of Violations issued, and referrals made to CalRecycle.

   From July 1, 2013, through June 30, 2014, 23,205 inspections were performed, 964 notices were issued, and 53 enforcement referrals were made to CalRecycle by grantees.

2. **Surveillance:**
   a. Monitor the effectiveness of surveillance activities by compiling comparative annual data of illegal tire piles identified via grantee or California Highway Patrol surveillance.

   From July 1, 2012, through June 30, 2013, surveillance activities identified 1,950 illegal tire piles. (Illegal tire piles are defined as one or more illegally dumped tire.) Using this data, CalRecycle was able to begin the waste tire enforcement process and subsequently began either disposing of individual or small piles of waste tires or issuing noncompliance notifications.

3. **Noncompliant Tire Businesses:**
   a. Monitor the effectiveness of progressive enforcement actions by compiling comparative annual data of enforcement actions initiated and resolved.

      From July 1, 2013 through June 30, 2014, staff initiated 11 enforcement actions, and 0 actions from this period and earlier were resolved. The unresolved items are under active enforcement orders.

4. **TEA Grant Program:**
   a. Increase or maintain waste tire enforcement grantee coverage in the state to 80 percent or more of active tire businesses for each fiscal year.

      For FY 2012/13 awards (cycle 20), 18,014 (92 percent) of active California tire businesses are covered by grantees.

   b. Conduct at least two grantee round tables per fiscal year.

      The Tire Enforcement Branch conducted a total of eight grantee roundtable meetings in the spring and fall of 2013. Subjects included inspection and enforcement procedures, tire enforcement legal issues, and general grant management and administration.

   c. Participate in the Annual Tire Conference.

      The Tire Enforcement Branch participated in the 15th Annual Technical Training Series held in March 2014.

   d. Monitor the effectiveness of the grant program by compiling comparative annual data of grant funds awarded and expended.

      Grantees were awarded $15,303,740 for the 17th and 18th grant cycles for work performed July 1, 2010, through June 30, 2012. Grantees expended $6,126,860 (81 percent) of the cycle 17 awards and $5,712,148 (73 percent) of the cycle 18 awards.

Hauler and Manifest Program

The Hauler and Manifest Program will use the following measures to evaluate success in achieving its objectives:

1. **Reduce the number of registered waste tire haulers that do not submit manifests by 50 percent by December 2013**.

   Currently, CalRecycle annually registers more than 1,400 waste tire haulers. Approximately 43 of these tire haulers (3 percent) have failed to submit any Comprehensive Trip Log forms to CalRecycle during the time period of November 2012 through December 2013. This represents a 12 percent reduction from previous findings. One possible explanation for some of these non-reporting haulers is that they may be required to be a registered waste tire hauler as a condition of a contractual agreement

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with counties, cities, or other governmental entities should the need arise, yet they may have not hauled any tires during this time period.

2. **Reduce the percentage of manifest form errors that are submitted by waste tire haulers by 45 percent by December 2013.**

   A review of the paper manifest forms submitted to CalRecycle during the time period of November 2012 through December 2013 shows that the error rate is currently at 11.5 percent (46,800 of 406,823 manifest form receipts showed Serious Level One errors). Serious Level One errors are defined as manifest form receipts that contain invalid or missing Tire Program Identification Numbers, missing or multiple load types, invalid or missing load amounts, missing load date, and neither or both pick-up or delivery boxes checked. The 11.5 percent error rate represents a 64 percent increase from the previous reported error rate of 7 percent. It is unknown why this increase occurred. It may have been caused by more new tire haulers joining the program and/or language barriers for new haulers who do not speak English as their primary language. The Tire Hauler Compliance Unit has been conducting training for the Spanish-speaking haulers at the California-Mexico border and in 2015 will bring that training up to the Southern California region (Los Angeles, Orange, San Bernardino, and Riverside counties) and the Central Valley. In addition, staff is developing training videos and other resources that will be available in 2015 to further explain the waste tire hauler registration process, manifesting requirements, and other hauler responsibilities. These will be available in both English and Spanish.

3. **Track the percentage of waste tire enforcement program cases for which the manifest system information has been used to assist CalRecycle and local enforcement agencies, and report annually.**

   During the time period from November 2012 through December 2013, approximately 85 percent (40 out of 47) of the enforcement cases used manifest information to assist in the enforcement actions. This data continues to demonstrate the importance of the manifest system in providing data to support the vast majority of CalRecycle's enforcement cases.

   Track the number of "204 Form" entries where the end-use facility operators are required to report unregistered waste tire haulers transporting tires to their facilities. During the time period from November 2012 through December 2013, approximately 913 complaints (204 Forms and hauler observation referrals) were submitted to CalRecycle. Of this number, 24 enforcement actions, including administrative complaints and streamline penalty cases, were taken against repeat violators. Enforcement action on complaints is generally reserved for repeat offenders; the vast majority of complaints are resolved with Letters of Violations and staff counseling of offenders on the legal requirements for hauling of used and waste tires. It should also be noted that the number of complaints has increased during this time period, from an average of 49 complaints per month to 65 complaints per month. This is a 33 percent increase, possibly due to local Tire Enforcement Agency oversight and an increase in CalRecycle inspections.

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4. **Track the number of penalties levied for violations of the PRC pertaining to waste and used tire hauling and report annually.**

   During the time period of November 2012 through December 2013, 419 enforcement cases were resolved against tire haulers resulting in assessed penalties of $92,375 along with $191,950 in penalties held in abeyance pending offenders' future satisfactory compliance with waste tire laws and regulations.

5. **Determine the quantity of waste or used tires being picked up or delivered in California by December 2013.**

   During the time period from January 2012 through December 2013, a total of 110,301,652 waste or used tires were picked up and 113,564,368 waste or used tires were delivered within the state. This indicates a yearly average of 55,150,826 waste or used tires picked up and 56,782,184 waste or used tires delivered. This is a sharp decrease (13.3 million and 20 million, respectively) from the previous years (2010–2012), which showed an annual average of 68,533,952 waste or used tires picked up and 76,057,582 waste or used tires delivered. One explanation for this dramatic decrease was that staff began to review and correct unrealistic load amounts reported on manifest forms. This was attributable, in some instances, to haulers mistakenly reporting the units of waste or used tires hauled as "tons" instead of whole tires or pounds, which could reflect loads of up to 230,000 passenger tire equivalents carried in one load.

Chart 1: Pick-up and Deliveries of Waste/Used Tires within California

Year	Pick-up in CA (PTEs)	Deliveries in CA (PTEs)
2012	54,854,310	55,629,866
2013	55,447,343	57,934,502
Totals	**110,301,652**	**113,564,368**

Cleanup Program

To evaluate the cleanup program's success in achieving its objectives, the following measures were proposed in the July 2011 Five-Year Plan:

1. **Complete the short-term waste tire remediation projects referred by the Enforcement Program in a timely manner, and report the status of projects to CalRecycle on an annual basis.**

   a. Gibson Waste Tire Site is a non-permitted, privately owned waste tire site that stored more than 5,000 commercial waste tires in a residential area in the southern portion of the City of Fresno, California. The County District Attorney's Environmental Cleanup Program was intimately involved with the enforcement actions, in concert with the Fresno County Local Enforcement Agency and CalRecycle's Waste Tire Compliance staff. Abatement orders were issued for remediation. The owner, due to noncompliance, was arrested and incarcerated for a number of days. The owner agreed to a plea bargain and agreed to allow the State to clean up

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all of the on-site collected tires and promised not to collect any more tires in the future. CalRecycle's Solid Waste and Tire Cleanup Program then obtained site access and conducted cleanup of the property. A lien was to be placed on the property to cover the cost of the site cleanup. The program contractor stacked, quartered, and transported approximately 5,000 commercial tires, or a total of approximately 180 tons of tires, for disposal at a county landfill (no recyclers would take them). The cost of this cleanup was approximately $100,000.

b. Castle Rock State Park is located along the crest of the Santa Cruz Mountain range west of Los Gatos along Highway 35 and is owned and operated by the California Department of Parks and Recreation (CDPR). Before the establishment of the park, the private property owner earned money by disposing of tires from local gas stations in a canyon on his property from the early 1960s until the 1980s. The tires were deposited on the surface or buried in place. CDPR requested assistance from CalRecycle's Cleanup Program to remove the tires as a threat to public health and the environment. CalRecycle used the San Jose Conservation Corp and Charter Schools (SJCCS) to help gather the surface tires into piles. (SJCCS provides disadvantaged young men and women with the academic education and job skills to enter and succeed in the workforce.) After the tires were consolidated, the Cleanup Program used its contractor to mobilize equipment to remove the tire piles and partially buried tires. The tires were transferred to a tire processor via dump trucks and were shredded and used for alternative daily cover at a landfill. Overall, approximately 9,000 tires were removed from the property. The cost of the project was approximately $150,000.

2. **Increase the number of sites remediated through the Local Government Waste Tire Cleanup Grant Program by 5 percent annually through 2014.**

   For 2014/15, the next cycle after the 2012/13 TCU14 cycle, a total of 23 grants were awarded, which is a zero percent increase.

3. **Increase the number of Local Government Waste Tire Amnesty grants issued to local governments by 5 percent annually through 2016.**

   For Fiscal Year 2013/14, a total of 52 grants were awarded. The number of grants awarded for amnesty increased 9 percent from Fiscal Year 2010/11 to Fiscal Year 2013/14.

4. **Increase the number of sites remediated through Farm and Ranch Cleanup grants issued to local governments by 10 percent annually through 2015.**

   In Fiscal Year 2013/14, 10 grants were awarded for the cleanup of 42 sites for a total of $632,261, a 6 percent increase over Fiscal Year 2012/13.

Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires

The research program will use the following measures to evaluate success in achieving its objectives:

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1. **Identify critical research gaps, such as issues related to health exposure, environmental impacts, market barriers, etc.; complete research projects to address these issues; and incorporate research findings in education, marketing, and outreach materials.**

   CalRecycle awarded research contracts to UC San Diego, CSU Humboldt, and CSU Chico to investigate issues that pose technical challenges to civil engineering applications that they promote. Specifically, contracts were awarded to UC San Diego to conduct material testing to determine the shear strength and other material properties of TDA; CSU Humboldt to investigate the use of TDA in subsurface storm water applications; and CSU Chico to develop performance model curves for use in pavement management systems to facilitate the use of RAC by local and state governments.

   Under another contract for the Tire Outreach & Market Analysis, CalRecycle is researching how to further utilize TDPs in existing products (feedstock conversion) and advance potential new applications, products, and technologies that use waste tires. Gaps in research, data and other information, and product testing will be identified so they can be addressed in order to expand markets for TDP. This effort should build upon the performance standards identified in the prior Tire-Derived Product Business Assistance Program: Industry-Wide Support Activities contract. Research information will be compiled, with consent from all relevant entities, to provide information and data to entities that have potential to convert their feedstock for existing products for TDPs and advance new applications, products, and technologies that use waste tires. Deliverables may include presentations, reports, data sheets, etc.

   CalRecycle also awarded a contract to CSU Chico to continue the efforts of the TDA Technology Center. As part of this contract, CSU Chico provides both TDA and RAC material testing services, distributes CalRecycle technical and outreach materials to stakeholders, evaluates RAC and TDA curriculum and education materials, and surveys California universities to identify barriers for use of the curriculum used to educate future engineers.

   Various technical documents from current and previous contracts were published on the CalRecycle website in 2013 and 2014. These included topics such as the Evaluation of Warm Mix Asphalt Technologies with Asphalt Rubber and Terminal Blends, Life Cycle Cost Comparison of Rubberized and Conventional HMA in California, and Properties of Tire-Derived Aggregate. Copies of these reports can be found in CalRecycle's Publications Catalog at http://www.calrecycle.ca.gov/publications

Market Development and New Technology Activities for Waste and Used Tires

The market development program will use the following measures to evaluate success in achieving its objectives:

1. **Increase the percentage of waste tires diverted from landfill disposal to 90 percent by 2015.**

   After reaching an all-time high of 92.9 percent in 2012 (and exceeding the 90 percent goal), the overall waste tire diversion rate dipped to 87.3 percent in 2013. According to the *2013 California Waste Tire Market Report*, in recent years, rapid and unprecedented growth in exports of tires to

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Pacific Rim nations was largely responsible for boosting the overall diversion rate. Exports are estimated to have declined by nearly 20 percent in 2013, compared to growth of nearly 30 percent between 2012 and 2013. While overall exports are estimated to have declined in 2013, this market segment is very dynamic. If waste tire exports, alternative daily cover, and TDF were excluded, the 2013 diversion rate would only be 38.7 percent. While these markets are controversial, they play an important role in expanding the diversion rate for California waste tires.

2. **Increase the amount (tons) of waste tires used in priority market segments, including RAC, molded and extruded products, civil engineering (transportation), etc.**

According to the *2013 California Waste Tire Market Report*, RAC and other paving material derived from waste tires decreased from 5.2 million PTEs in 2012 to 3.5 PTEs in 2013; molded and extruded products decreased from 1.3 million PTEs in 2012 to 0.9 million PTEs in 2013; and civil engineering applications increased from 0.12 million PTEs in 2012 to 0.5 million PTEs in 2013.

To increase waste tire usage, CalRecycle offers tire-derived aggregate, rubberized pavement, and tire-derived products grant programs along with a tire incentive program.

CalRecycle continues to address the lack of familiarity of use of waste tires in civil engineering applications, specifically RAC and TDA, by increasing outreach efforts through more focused technology exchange and outreach to local and state governments, contractors, and engineers in projects for which these technologies are viable. In fact, CalRecycle's past outreach efforts have resulted in the construction and design of numerous TDA projects, including expansion of the Bay Area Regional Transit (BART) and the integration of new rubber paving technologies such as warm mix into CalRecycle's rubberized pavement grant program. The success of these projects demonstrates that technical challenges and environmental concerns can be overcome to create long-term sustainable markets for both RAC and TDA.

Higher value-added products continue to be a focus area for CalRecycle. To assist in expanding this segment, CalRecycle pursues a three-point strategy.

- First, exposure and familiarity with the myriad of tire-derived products are increased through the Tire Outreach and Market Analysis (TOMA) contract. Various "lunch and learn" opportunities are offered for architects and purchasing managers for local governments and school district officials.

- Second, local governments and school districts are supported in their desire to purchase and develop experience with various tire-derived products with Tire-Derived Product Grants that can reimburse most or all of the TDP cost. The intention is that once local governments and school districts gain experience with a TDP, they will purchase additional TDPs based on product performance and not rely on a grant.

- Third, higher value-added products are supported by a Tire Incentive Program (TIP). The TIP provides an incentive to manufacturers to produce and sell products using crumb

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rubber (including fine ≤50 mesh material), which may be combined with other materials. This innovative effort is enhanced by a contract to provide technical assistance to manufacturers to produce products with crumb rubber or to increase the percent of crumb rubber used.

3. **Increase the number of state agencies that are contacted regarding procurement of priority products or uses and those that subsequently purchase such products or employ such uses.**

To improve the positioning of California TDP suppliers to sell products to targeted customer groups, more than 300 outreach presentations reaching more than 2,818 attendees have been made as of November 2014. Combinations of live presentations and webinars have served to educate and inform government and private entities about TDPs. Audiences have included community development companies, city and county departments (parks and recreation, public works, fairgrounds), private architect firms (schools, franchised restaurant), professional associations (private building management, public school greening), and state departments. Targeted conferences and trade shows have included local government public works and parks and recreation officials, school officials, the private building industry, the private landscape industry, and facilities managers. News and information articles have been published in Scrap Tire News, Resource Recycling Magazine, Western Cities Magazine, U.S. Green Building Council, Coalition for Adequate School Housing, and the Building Office Managers Association.

When comparing data from Fiscal Year 2011/2012 and Fiscal Year 2012/2013 as reported through the State Agency Buy Recycled Campaign (SABRC) reporting system, the spending remained constant at 78 percent in SABRC-reportable TDP purchases. The number of state agencies purchasing SABRC-compliant TDPs decreased from 41 to 39.

4. **Increase the purchase of tire-derived products (TDPs) by local jurisdictions (measured in tons and broken out by rubberized asphalt concrete, tire-derived aggregate, and other tire-derived products).**

CalRecycle conducts a periodic survey of the Tire-Derived Product (TDP) Grant Program. The survey poses a variety of questions to determine program effectiveness and TDP usage. The 2015 TDP survey covering Fiscal Years 2006/07 through 2011/12 grant cycles. The survey results concluded:

- 90 percent rated the TDP performance as excellent or good
- 85 percent were satisfied or very satisfied with the product
- 85 percent responded that maintenance had decreased or remained the same
- 79 percent responded they had not used TDPs prior to the grant
- 21 percent have used their own funds to purchase additional TDPs since receiving the grant
- 19 percent responded that they would not purchase the TDP in the future without a grant

A similar survey was conducted of the Rubberized Pavement Grant Program (and its predecessor programs) grantees. The 2015 survey covering 2006/07 through 2011/12 grant cycles. The survey results concluded:

- 92 percent were satisfied or very satisfied with the material

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- 68 percent responded that they have realized lower maintenance costs
- 61 percent found the technical assistance and training provided by CalRecycle to be beneficial or very beneficial
- 53 percent had used rubberized material prior to the grant
- 55 percent have used their own funds to purchase rubberized material since receiving the grant
- 24 percent responded that they would not purchase rubberized material in the future with a grant

Respondents indicating that they would use rubberized material provided the following reasons for choosing rubberized material (respondents were allowed the option of selecting more than one reason):

- 53 percent responded because the material is long-lasting and durable
- 39 percent responded because the material reduces landfill disposal of tires
- 34 percent responded because the material reduces noise
- 21 percent responded because the material is cost-effective

Because the Tire-Derived Aggregate Grant Program was first offered in FY 2011/12 with one grant being completed, there was no survey.

5. **Reduce the number of waste tires generated in California from 1.1 to 0.9 per person per year by 2015.**

   As of 2013, the rate of tires generated per person per year was 1.1, which is a decrease from the 1.2 reported in 2012. While population only increased by less than 1 percent during this period, the amount of estimated tires managed in California decreased from 45.8 to 42 million PTEs, which is an 8.2 percent decrease.

6. **Reduce the annual average of dollars awarded per Passenger Tire Equivalent diverted within individual grant programs: Rubberized Pavement Grant Program, Tire-Derived Product Grant Program, and Tire-Derived Aggregate (TDA) Grant Program over a five-year period (2011–2016).**

   Chart 2 provides data for the four grant programs over a five-year period (2011-2016). Based on data from the three cycles that have closed, the actual amount per PTE is lower than the originally estimated amount per PTE.

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Chart 2: Summary of Grant Programs by Fiscal Year

Fiscal Year	Funds Awarded	Funded Expended	PTE (Estimated)	PTE (Actual)	Amount per PTE (Estimate	Amount per PTE (Actual)
Pavement (TRP)						
2011/12	$7,791,104	$5,154,717	843,580	691,142	$9.24	$7.46
2012/13	$3,623,790	Open Cycle	338,196	Open Cycle	$10.72	Open Cycle
2013/14	$3,000,000	Open Cycle	274,818	Open Cycle	$10.92	Open Cycle
Pavement Total:	**$14,414,894**	**$5,154,717**	**1,456,594**	**691,142**		
TDA						
2011/12	$609,223	$37,328	945,600	470,000	$0.64	$0.08
2012/13	$718,955	Open Cycle	2,126,300	Open Cycle	$0.34	Open Cycle
2013/14	$646,371	Open Cycle	845,000	Open Cycle	$0.76	Open Cycle
TDA Total:	**$1,974,549**	**$37,328**	**3,916,900**	**470,000**		
TDP						
2011/12	$8,089,593	$4,699,028	1,865,068	1,377,735	$4.34	$3.41
2012/13	$4,050,109	Open Cycle	1,012,921	Open Cycle	$4.00	Open Cycle
2013/14	$1,436,441	Open Cycle	343,275	Open Cycle	$4.18	Open Cycle
TDP Total:	**$13,576,143**	**$4,699,028**	**3,221,264**	**1,377,735**		
TIP (New Program)						
2013/14	$2,627,552	Open Cycle	2,205,002	Open Cycle	$1.19	Open Cycle
TIP Total:	**$2,627,552**	**$0**	**2,205,002**			

Open Cycle: Data for Estimated PTEs was derived from the grantee's Tire Certification (Form 227) that accompanied the grantee's application. Data for the Estimated Amount per PTE was derived from Funded Awards divided by the estimated PTEs.

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7. **Increase regional capacity to produce chipped and shredded tire-derived aggregate (TDA) for civil engineering projects.**

   Although TDA use is increasing, the demand for TDA has not significantly increased regional capacity for TDA. The current demand for smaller projects like the landfill gas expansion projects are being addressed by the current regional capacity, while the demand for large projects such as the Milpitas BART light rail project are being met by multiple regional suppliers.

8. **Increase in-state production and use of finer-ground rubber (up to 60 mesh) for production of molded and extruded products.**

   According to the *2013 California Waste Tire Market Report*, in 2013 about 7.9 million pounds of ground rubber, derived from about 0.9 million Passenger Tire Equivalents, were used to produce molded and extruded products, a 32.5 percent decrease in the estimated volume when compared to 2012.

The ≤ 50 mesh crumb rubber is used primarily in asphalt products such as asphalt coatings, sealants, and asphalt shingle products. Terminal blend is a rubber paving technology in which 30 minus mesh crumb rubber is currently used in production. The ≤ 50 mesh crumb rubber may be used, but because it is more expensive to produce ≤ 50 mesh than 30 minus mesh, it will likely increase the cost for producing terminal blend.

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Appendix B: CalRecycle Border Activities

Used and waste tires continue to flow into Mexico through border entries, and a portion of these end up as waste tires that are illegally disposed along the California-Mexico border. The waste tires that end up along these borders are either dumped illegally at various sites or used for structural purposes in or near Tijuana, Mexico. They then cause environmental problems in the California/Mexico border region, including in the Tijuana River estuary. These waste tires are from many sources, including new tires originally sold in Baja California and used tires imported as commodities into Baja California from California, Arizona, and other states and then subsequently discarded after use.

To date, many entities—Mexican and United States federal agencies, state and local agencies, and non-profit organizations—have tried to deal with this problem, with most efforts focused on cleanup and remediation of large legacy tire piles and of the Tijuana River estuarine area. CalRecycle's efforts in this regard, described below, entail enforcement support, hauler manifesting and compliance, cleanup, and research and technical assistance; tire recycling funds have not been used for activities south of the border. Collectively, these multi-party efforts, while necessary and productive, have not been sufficient to stem the problem on a long-term basis.

Based on more than 20 years of experience implementing tire-related management programs, CalRecycle believes a long-term solution to this problem will depend on Baja California's leadership in developing a strong institutional framework, along with a financing mechanism, and implementing key regulatory and market development functions similar to those seen in California and other states, such as facility permitting and oversight, hauler registration and compliance, enforcement, cleanup and remediation, and research and market development. Based on its previous work with the University of California, Berkeley on a model tire management framework for Baja California, it is CalRecycle's understanding that the Mexican federal and Baja California governments have made significant progress in the last few years in establishing an overall statutory framework for tire management. CalRecycle welcomes the opportunity to provide technical assistance to the government of Baja California as it engages in institutionalizing and financing a long-term management program.

At the same time, CalRecycle recognizes the need to better understand current used and waste tire flows in the border region and to collaborate with multiple stakeholders on identifying and prioritizing specific border projects where the use of tire funds may be most effective in contributing to long-term environmental protection in the region. Accordingly, as an initial step, CalRecycle is planning a new project to accomplish these objectives that will start in FY 2015/16 and be funded at a level of up to $500,000; this is described in more detail in the section on "Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires; and Market Development and New Technology Activities for Waste and Used Tires." The remainder of this appendix lists other activities that CalRecycle has engaged in or that are planned to address these serious, shared risks to health and safety and the environment.

Most recently, CalRecycle also used its Cleanup Program contractor to provide $18,000 in labor and materials to assist and support the Tijuana River Action Network (TRAN) in its implementation of the fall 2015 Tijuana River Action Month (TRAM) Volunteer Cleanup Activities to remove tires, brush, and waste materials from the Tijuana River Valley during this annual program.

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Waste Tire Enforcement Support Activities

California Highway Patrol Agreement to Support Enforcement Activities: CHP to continue its support to CalRecycle's field efforts in the areas of ground and aerial surveillance, covert and overt investigations, inspector security, training for state and local law enforcement officers, and roadside checkpoints to assist CalRecycle as well as local enforcement personnel in regard to waste facility and hauling violations. This effort includes a surveillance and enforcement support focus on illegal activities related to tire exports through California ports and in the California/Mexico border region.

ARB Surveillance Assistance: CalRecycle entered into an agreement with the Air Resources Board (ARB) in May 2014, which continues ARB's previous support of field investigative efforts by CalRecycle tire enforcement staff and local enforcement waste tire grantees. ARB has extensive experience in assisting other agencies in the purchase, maintenance, monitoring, and use of both covert and overt surveillance equipment. ARB's expertise has aided, and should continue to aid, CalRecycle and local waste tire grantees in their efforts to deter or locate and prosecute those who illegally haul or dispose of tires, or illegal activities related to tire exports through California ports. Additionally, ARB will assist CalRecycle in identifying and procuring more sophisticated surveillance equipment for covert activities allowing for real-time remote monitoring and sensing.

Training Support for Waste Tire Inspectors and Managers: Each year CalRecycle offers its annual technical training series that includes sessions for waste tire inspectors and managers. Sessions include: 1) Inspection Skills & Investigative Techniques for Waste Tire Field Inspectors; 2) Basic Waste Tire Facility Permitting Overview; 3) Investigative Techniques and How to Involve Other Agencies in Tire Investigations and Prosecution; 4) Tire Evidence Collection and Case File Preparation; 5) Effective Report Writing for Tire Inspections; 6) Tire Surveillance Case Study; and 7) a tour of a local tire-derived product producer.

Analysis of Targeted Study Areas for Waste Tire Enforcement: The California/Mexico Border Tire Flow Study that was completed in 2009 found that about 750,000 tires were taken across the border legally as used tires because there was a market in Mexico. An additional 75,000 tires were taken across the border illegally. Since the number of tires taken into Mexico illegally was relatively low, CalRecycle decided not to pursue an additional tire flow report. Instead, CalRecycle decided to provide technical assistance for Baja California in the development of an integrated waste tire management plan.

Hauler Manifest and Compliance

The Tire Hauler Compliance Unit, which includes the waste tire hauler manifest system, continues to be successful in having Mexican tire haulers register with CalRecycle. Currently, 40 waste tire haulers from Mexico are registered. The compliance unit has four Spanish-speaking staff, allowing easier and more receptive communications with the Spanish-speaking regulated community. Additionally, the unit has a separate toll-free waste tire hotline number for Mexico. In 2014, approximately 60 Mexican tire haulers were trained in California's waste tire hauler registration and manifest program's regulations and requirements. This training was carried out with cooperation from the Association of Used Tire Dealers for the Mexican States of Baja California, Baja California Sur, and Sonora. Training in Mexico has not occurred for the past several years due to safety concerns across the border and travel constraints; however, staff has worked closely with the Mexican associations to provide the most current information.

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Additional training is planned in 2015 for the Spanish-speaking population in the greater Los Angeles/San Bernardino county areas as well as portions of the central valley.

Cleanup Activities

Large quantities of trash, tires, and sediment are transported by storm water from Mexico into the Tijuana River Valley and estuary, adversely impacting Border Field State Park south of San Diego and the Tijuana River National Estuarine Research Reserve. The Tijuana River Recovery Team is a consensus-based collaboration of more than 30 federal, state, and local government agencies, environmental and scientific community stakeholders, and funding agencies formed to address the broad range of issues affecting the watershed. To spearhead this effort, in 2010 CalRecycle developed and implemented a project with California State Parks to capture tires and solid waste currently discharged to Goat Canyon within Border Field State Park. The Goat Canyon cleanup project removed tires, trash, and sediment from the debris basin and installed a debris netting and capture system to collect tires and trash from Mexico and prevent their to discharge into the estuary. The project cost approximately $2 million and included a related consultant study to evaluate the nature and extent of trash, waste tires, and sediment in the Tijuana River Valley.

In September 2012, CalRecycle again approved funding for a CalRecycle-managed cleanup of the Border Field State Park illegal disposal site, Tijuana River Valley and Estuary, and the Goat Canyon trash capture and removal system cleanout. This project was completed in January 2013 at a cost of approximately $1 million. Refuse-laden sediment was removed from the basins and screened for future studies and use. The California Department of Parks and Recreation contributed $300,000 to the cleanup project. CalRecycle is currently working to develop potential new cleanup project concepts in the Tijuana River Valley.

In addition, CalRecycle implements two local government cleanup grant programs that include projects in the border region. During FY 2012/13, $420,855 in Local Government Waste Tire Cleanup Program grants were awarded in the border region (Imperial County, San Diego County, and the City of San Diego), which resulted in the cleanup of 60,490 waste tires. This represents 24 percent of the total cleanup grants awarded ($1,723,223) statewide.

In FY 2012/13 the Local Government Waste Tire Cleanup and Amnesty Grant Programs were separated into two separate, two-year cycles. The programs were offered in alternating years, beginning with the Cleanup Program; therefore, Waste Tire Amnesty Grants were not awarded in FY 2012/13. For FY 2013/14, $94,754 was awarded for amnesty grants in the border region (Imperial and San Diego counties) to clean up an estimated 580,092 tires. This represents 5 percent of the total amount of funds awarded for this grant cycle. The actual number of tires collected for this grant cycle is unknown until the cycle closes in June 2015.

Research, Bi-National Collaboration, and Technical Assistance Activities

Study on the Flow of Used and Waste Tires from California and Mexico: Mexico imports used tires from California that have a very short life span. Many of these imported tires are illegally disposed of and cause environmental hazards. For example, tires illegally disposed in the Mexican border region have caused environmental issues in California, from tires and other debris entering the Tijuana Estuary

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polluting the watershed to toxic smoke from tire fires in Mexicali dispersing into Calexico. The study completed in 2009 found that about 750,000 tires were taken across the border legally as used tires because there was a market in Mexico. An additional 75,000 tires were taken across the border illegally. In 2009, CalRecycle decided not to pursue an additional tire flow study and decided instead to pursue activities that were already under way, such as work with the CHP and translation of educational materials into Spanish. A copy of the report can be found online: http://www.calrecycle.ca.gov/publications/Detail.aspx?PublicationID=1338

Bi-National Program Participation: In the past, CalRecycle has participated with the Resource Conservation Challenge Border Group, California Biodiversity Council, Biodiversity Along the Border Committee, 2008 Border Governors Conference, and the Border 2012 Program. Currently, CalRecycle continues to participate with the Tijuana River Valley Recovery Team and looks forward to participating with the newly formed Border 2020 U.S.-Mexico Environmental Program to resolve the problems caused by illegally dumped waste tires along the border region.

The Border 2012 program (also known as the U.S.-Mexico Environmental Program) was a broad environmental collaborative with bi-national entities, coordinated by (and with funding from) the U.S. EPA. Important components of the Border 2012 program included community outreach, training, technical support, and cleanup of waste tire sites along the California-Mexico border. The program accomplished cleaning up of both the Innor and El Centinela scrap tire sites in Baja California, which combined contained more than 1.25 million tires. These tires were shredded and used as fuel in various cement kilns in Mexico. To date, more than 6.8 million tires overall have been recovered in the border region through the partnership. CalRecycle continues to collaborate with CalEPA and the Border 2020 program participants to help develop community outreach, additional training, and technical support to Mexican tire haulers, and training for CHP commercial officers who work along the California-Mexico border.

Technical Assistance for Baja California's Development of Integrated Waste Tire Management Plan:
In January 2011, CalRecycle entered into a contract with the University of California, Berkeley to provide technical assistance for a framework for cooperation among jurisdictions on both sides of the border to adequately address the continued illegal dumping of waste tires that cause problems in the border region. *Methodology for the Development of a Model Integrated Waste Tire Management Plan Framework for the State of Baja California* was published in November 2012 and can be found in English and Spanish: http://www.calrecycle.ca.gov/Publications/Documents/1440%5C2012%5C20121440.pdf

Sharing Environmental Education Materials in the Border Region: SB 772 (Ducheny, Chapter 214, Statutes of 2005) required CalRecycle to work with Mexico in areas related to waste and used tires, and environmental education and training. In coordination with CalEPA and CalRecycle's Office of Education and the Environment, the tire program developed a mechanism with Mexico's Secretariat for Public Education, Baja California's Secretaria de Protection Ambiental, and Baja California's Education System allowing for bi-national distribution of CalEPA's environmental education curriculum titled *Conservation and Pollution Prevention at a Shared Border* (Adams, Linda S., 2007). This elementary school curriculum includes lessons that are relevant to prevalent border conditions such as land, water, and air pollution, and is consistent with existing environmental education and training principles in Mexico. In 2007–08, English and Spanish versions of the curriculum were provided to 12,000 border teachers, educators, and schools. This curriculum contains scientific and resource-based lessons regarding the border area, with key steps toward environmental sustainability.

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