BEACON ECONOMICS

# Cost Impact Analysis of MS4 Tentative Order for San Bernardino County

September 2024

# Executive Summary

In this report, Beacon Economics estimates the explicit and implicit costs associated with the proposed Regional Municipal Separate Storm Sewer System (MS4) Permit (referred to as Tentative Order (TO)) for the local government agencies in San Bernardino County under the regulatory jurisdiction of the Santa Ana Regional Water Quality Control Board. These Permittees (cities, the county, and the Flood Control District) have been regulated since 1990 under a series of MS4 permits that set forth regulations on how stormwater runoff from urbanized areas is to be monitored and managed.

We find that most new costs ($billions) will be associated with:

> **Attaining water quality objectives** for stormwater, which will effectively require the urban landscape to be constructed in accordance with a Watershed Management Plan (WMP).

Further new costs ($millions) will be incurred in relation to a ratcheting up of existing mandatory mitigation measures, including:

(1) **Increasing the frequency of inspections for businesses and construction sites**, particularly since general industrial permit holders and all food and drink establishments are now required to undergo annual inspections.

(2) **Installing, maintaining and monitoring trash and litter capture devices on most street drain inlets.** While installation and maintenance have been mandated by the state's trash policy, the requirement for monitoring is a new addition.

(3) **Requiring incorporation of features for water quality protection (referred to as Water Quality Management Plan (WQMP) requirement)** into a much broader universe of qualifying public and private development and redevelopment projects.

Over the next 20 years, these changes will cost San Bernardino County **nearly $10.8 billion**. This estimate does not include all possible costs or unintended consequences that could arise from the change in MS4 permitting requirements.

| San Bernardino County 20-Yr Cost Estimates (2024 $) | | |
|---|---|---|
| Numeric Limits Compliance/WMP | $ | 10,219,563,415.05 |
| Development/Re-Dev. | $ | 552,204,672.74 |
| Comm. Inspection | $ | 13,321,247.92 |
| Trash | $ | 6,560,000.00 |
| Ind. Inspection | $ | 1,947,649.80 |
| **Total Costs** | **$** | **10,793,596,985.51** |

- **NUMERIC LIMITS COMPLIANCE, WMP DEVELOPMENT, AND COMPLIANCE MAINTENANCE** We estimate median capital costs of approximately $7.52 billion and annual O&M costs of $135 million for San Bernardino. Over 20 years, it will cost San Bernardino approximately **$10.2 billion** to develop and maintain a WMP.

- **DEVELOPMENT AND RE-DEVELOPMENT** Installation of ADA ramps exceeding 5,000 square feet will now trigger a WQMP, which will create delays and constrain city budgets. Due to changes in requirements for when a development triggers a WQMP could increase the construction cost of single-family homes by up to **$25,000 per home**. Assuming the exact same conditions for all single-family home developments in the county, this equates to increased single-family housing costs of **$27.6 million** across the county. Over 20 years, the aggregate increase in housing costs across the county would be **$552.2 million**.

  Rising constructions costs are particularly problematic as **residential construction has decreased substantially over the last 45 years**. Low housing supply in the face of a growing population leads to **rising home prices**.

- **COMMERCIAL INSPECTIONS** Commercial inspection costs are expected to rise by over **$13.3 million** over the next 20 years in San Bernardino due to more frequent inspections of Low Priority facilities and food and drink establishments. All but one of the agencies that will be disproportionately impacted encompass disadvantaged communities. Of these four, Ontario will likely be impacted most, followed by Chino and Colton.

- **TRASH COMPLIANCE** Over the next 20 years, it will cost over **$6.5 million** for San Bernardino to comply with the new monitoring requirements for trash.

- **INDUSTRIAL INSPECTIONS** The changes presented in the TO will increase industrial inspection costs by approximately **$1.9 million** over the next 20 years.

All the agencies that will be disproportionately impacted encompass disadvantaged communities. Of these four, Fontana and Ontario will likely be impacted most.

In addition to explicit costs, Beacon Economics considers the implicit costs or opportunity costs that will likely be incurred by San Bernardino County in meeting the proposed requirements. These costs include those associated with increased tax rates and redirected county funds. The financial implications of the TO raise concerns about resource allocation in counties already facing serious socioeconomic challenges. Redirecting funds to meet TO requirements could undermine ongoing efforts to support disadvantaged communities, risking the deepening of existing economic hardships.

| | Cost Share % | Capital ($M) | 1-Yr O&M ($M) | 20-Yr O&M ($M) | General Fund ($M) | Share of General Fund Budget | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Capital | 1-Yr O&M | Capital/5 + 1-Yr O&M |
| **Estimated Median Cost (WMP)** | | **$7,522** | **$135** | **$2,698** | | | | |
| Grand Terrace | 1.66% | $125 | $2 | $45 | $7.86 | 1588.5% | 28.5% | 346.2% |
| Highland | 3.63% | $273 | $5 | $98 | $23.85 | 1144.9% | 20.5% | 249.5% |
| Yucaipa | 4.19% | $315 | $6 | $113 | $28.81 | 1093.9% | 19.6% | 238.4% |
| Chino Hills | 5.23% | $393 | $7 | $141 | $55.27 | 711.8% | 12.8% | 155.1% |
| Loma Linda | 2.31% | $174 | $3 | $62 | $26.71 | 650.4% | 11.7% | 141.7% |
| Rancho Cucamonga | 8.37% | $630 | $11 | $226 | $117.83 | 534.3% | 9.6% | 116.4% |
| County of San Bernardino | 13.51% | $1,016 | $18 | $364 | $193.00 | 526.5% | 9.4% | 114.7% |
| Upland | 4.15% | $312 | $6 | $112 | $61.30 | 509.2% | 9.1% | 111.0% |
| Big Bear Lake | 1.63% | $123 | $2 | $44 | $24.26 | 505.5% | 9.1% | 110.2% |
| Fontana | 9.51% | $715 | $13 | $257 | $149.08 | 479.8% | 8.6% | 104.6% |
| Montclair | 2.45% | $184 | $3 | $66 | $39.36 | 468.2% | 8.4% | 102.0% |
| Colton | 3.45% | $259 | $5 | $93 | $65.94 | 393.5% | 7.1% | 85.8% |
| San Bernardino | 10.53% | $792 | $14 | $284 | $224.81 | 352.3% | 6.3% | 76.8% |
| Chino | 4.95% | $372 | $7 | $134 | $112.30 | 331.5% | 5.9% | 72.3% |
| Redlands | 5.10% | $384 | $7 | $138 | $115.73 | 331.5% | 5.9% | 72.2% |
| Rialto | 5.34% | $402 | $7 | $144 | $129.29 | 310.7% | 5.6% | 67.7% |
| Ontario | 9.00% | $677 | $12 | $243 | $428.87 | 157.8% | 2.8% | 34.4% |
| SB County Flood | 5.00% | $376 | $7 | $135 | - | - | - | |
| **Average** | **6%** | **$418** | **$7** | **$150** | **$106.13** | **594%** | **11%** | **129%** |
| **Median** | **5%** | **$374** | **$7** | **$134** | **$65.94** | **505%** | **9%** | **110%** |

- **SOCIECONOMIC FACTORS AND DISADVANTAGED COMMUNITIES** The county's socioeconomic vulnerabilities are profound, with **33% of its population living in Disadvantaged Communities (DACs). Nine agencies in the county have poverty rates above the state average.** Six of these nine are within the Santa Ana region, including San Bernardino (18%), Ontario (13%), Rialto (15%), Montclair (10%), Highland (16%), and Colton (15%).

Considering the stormwater program cost shares assigned to each agency in San Bernardino County, we find that the estimated Numeric Limits Compliance/WMP (capital spread out over five years plus one year's O&M) would equate, **at best, to a third, and at worst, three-and-a-half times an agency's general fund budget**. This means if agencies attempt to pay for their fair shares of the numeric limit compliance/regional WMP development in five years, in most cases, they will **have no general funds left over for other public expenditures** (legal services, libraries, parks and recreation, police, public works, etc.).

- **CAPITAL AND O&M COSTS** San Bernardino County faces severe financial challenges under the TO, with most cities experiencing **capital costs exceeding 300% of their general funds**. Particularly, Grand Terrace, Highland, and Yucaipa are highlighted as cities where one year's O&M costs alone consume a large share of their general funds. The potential financial demands associated with the TO could present these cities with difficult decisions between regulatory compliance and maintaining essential public services and infrastructure. Cities with poverty rates above the 12% state average would need to contribute substantially to WMP costs, indicating that **economic vulnerability is prevalent in areas financially burdened by TO requirements**.

- **IMPACTS ON AQUATIC LIFE** While the goal of the TO is to increase the water quality, the impact on local aquatic life may be negative, and may conflict with conservation efforts by the MWD. The **San Bernardino MWD is leading a large-scale habitat conservation plan**, including multiple tributary restoration projects along the Santa Ana River. Currently, these tributaries have flows and are important habitats for aquatic species such as the western pond turtle, Santa Ana sucker, and Arroyo chub, some of which are federally threatened.

Photo credit: Oregon Dept. of Fish & Wildlife; Santa Ana Watershed Project Authority; Zack Abbey.

A significant concern of the TO is the **potential impact of the new prohibitions on these local aquatic species**.

# Introduction

The **Santa Ana Regional Water Quality Control Board** (**Santa Ana Water Board**) is a state government agency responsible for protecting and improving water quality within the Santa Ana River Watershed, which spans portions of Riverside, San Bernardino, and Orange counties in Southern California.

Stormwater from the Santa Ana River Watershed flows through a network of channels and eventually drains into the Pacific Ocean, via the Santa Ana River. The Municipal Stormwater Program of the Santa Ana Water Board regulates stormwater discharges from **municipal separate storm sewer systems (MS4s)** throughout the Santa Ana River Watershed. As per the Federal Water Pollution Control Act (Clean Water Act) section 402(p), stormwater permits are required for discharges from an MS4 that serves a population of 100,000 or more.

MS4 permits in the Santa Ana River Watershed have been issued since the 1990s and have been renewed four times since their initial issuance. Until now, the Santa Ana Water Board has regulated portions of the Orange, Riverside, and San Bernardino counties located within the Santa Ana Region through separate Phase 1 MS4 permits for each county. These permits expired but were administratively extended and so, remain in effect.

Currently, a **Tentative Order (TO)** has been drafted for a fifth iteration, where for the first time, the separate permits would transition to a single Regional MS4 permit covering those portions of the Orange, Riverside, and San Bernardino counties (including their cities and flood districts) located within the jurisdiction of the Santa Ana Water Board.

In addition to consolidation of the three counties' MS4 permits into a single regional permit, the TO addresses administrative details, discharge prohibitions—including those related to non-stormwater runoff[1] and trash—and outlines specific requirements for managing new developments to reduce pollution and hydrological impacts. It also contains provisions for detecting and eliminating illicit discharges, as well as public education initiatives and training programs to ensure compliance.

[1] The TO includes a list of authorized non-stormwater discharges. These authorized discharges include air conditioning condensate, fire hydrant flushing, non-commercial vehicle washing, among other exempt discharges.

Most notably the TO includes responsibilities for Permittees to:

(1) Engage in an **iterative process** for continual improvements in all their programs, to achieve compliance with Effluent Limits and Receiving Water Limitations, including numeric Effluent Limits based on **Waste Load Allocations (WLAs)**.

(2) Adopt a **system of performance metrics** prescribed by the draft permit to objectively measure the performance of their control measures and **Best Management Practices (BMPs)**.

While the primary goal of the TO is to strengthen BMPs and pollutant control measures in pursuit of better water quality (as established in the Water Quality Control Plan for the Santa Ana River Basin) an objective analysis of the costs is necessary to meet federal and state requirements.[2] In this report, **Beacon Economic** estimates the costs for San Bernardino County Permittees associated with the more stringent MS4 permitting requirements as set forth in the TO.

[2] Federal law mandates that "social, economic, and environmental consequences of proposed decisions shall be clearly stated in [informational materials]." (40 C.F.R. § 25.4(b)(2).) State law mandates evaluation of all "impacts of the permitted activity," not just water quality impacts. (Wat. Code, § 13149.2, subd. (b)(2).)

# Part I. Explicit Costs

As a first step, Beacon Economics estimates the expected **explicit costs** to be expended with the new requirements. Explicit costs are those directly associated with outlays of money, including those incurred once and those incurred on an ongoing basis.

The TO is based on the federal standards for MS4s established by the **Clean Water Act (CWA)** section 402(p)(3)(B), which require MS4s to "reduce the discharge of pollutants to the **maximum extent practicable [MEP]**." MEP is the highest level of effectiveness that can be achieved employing whatever BMPs are technically feasible (i.e., those that are likely to be effective) and are not cost prohibitive.[3] The TO also references State Water Resources Control Board precedential orders directing that MS4 permits in California require the eventual attainment of water quality standards.

The MEP standard applies to a series of provisions in the TO referred to as the **minimum control measures** (40 CFR, section 122.26 (d)(2)(iv)). These measures include, among others, discharge elimination and remediation, runoff monitoring and reporting, conducting program effectiveness assessments, conducting municipal inspections, and public education.

## WATERSHED MANAGEMENT PLAN COSTS

As part of the new permitting requirements, Permittee counties will likely need to adopt **Watershed Management Plans (WMPs)** or similar plans attempting compliance with the numeric limits in the TO. For the purposes of this section, numeric limits compliance measures and WMPs are synonymous.

To estimate the capital cost of developing these plans, as well as the associated annual **Operations and Maintenance (O&M)** costs, cost estimates were extrapolated from WMP groups as presented in the 2021 Los Angeles Water Board Study.[4] These costs are incurred by implementing a systemwide combination of parcel-scale water quality controls, street

[3] State Water Resources Control Board Office of Chief Counsel February 11, 1993 Memorandum, "Definition of Maximum Extent Practicable."

[4] https://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/public_docs/2022/Att_F_FactSheet_corrected(ACC).pdf

drainage retrofits (often referred to as "Green Streets") and regional stormwater capture facilities.

**Table 1. Permittees' Projected Cost Estimates for EWMP Full Implementation (Millions of Dollars, 2019$)[5]**

| EWMP Group | Capital (Low) | Capital (High) | Annual O&M (Low) | Annual O&M (High) | Total 20-Yr Cost (Low) | Total 20-Yr Cost (High) |
|---|---|---|---|---|---|---|
| Ballona Creek | $2,892.12 | $2,892.12 | $82.55 | $82.55 | $4,543.09 | $4,543.09 |
| Dominguez Channel | $1,340.65 | $1,340.65 | $15.39 | $15.39 | $1,648.41 | $1,648.45 |
| Malibu Creek | $201.54 | $201.54 | $3.86 | $3.86 | $278.71 | $278.71 |
| Marina Del Rey | $368.12 | $368.12 | $2.39 | $2.39 | $415.91 | $415.91 |
| North Santa Monica Bay | $34.51 | $34.51 | $1.15 | $1.15 | $57.55 | $57.55 |
| Palos Verdes Peninsula Cities | $90.00 | $129.50 | $1.34 | $1.52 | $116.80 | $159.90 |
| Rio Hondo/San Gabriel River | NR | NR | NR | NR | $121.80 | $121.80 |
| Santa Monica Bay J2 & J3 | $660.02 | $660.02 | $4.82 | $4.82 | $756.38 | $756.38 |
| South Bay Beach Cities | $46.13 | $95.48 | $2.15 | $3.33 | $89.04 | $162.00 |
| Upper LA River | $6,541.98 | $6,541.98 | $123.38 | $123.88 | $9,009.65 | $9,009.65 |
| Upper San Gabriel River | $1,216.34 | $1,216.34 | $44.31 | $44.31 | $2,102.59 | $2,102.59 |
| Upper Santa Clara River | $669.12 | $669.12 | NR | NR | $669.12 | $669.12 |
| **Total** | | | | | **$19,809.06** | **$19,925.11** |

Source: Los Angeles Water Board Analysis.

**Table 2. Estimated WMP Capital and O&M Costs for San Bernardino County, Extrapolated by Relative Land Area (Millions of Dollars, 2019$)**

| EWMP Group | Land (in Acres) | San Bernardino Land Ratio[6] | San Bernardino County Costs | |
|---|---|---|---|---|
| | | | Total 20-Yr Cost (Low) | Total 20-Yr Cost (High) |
| Ballona Creek | 81,677 | 4.22 | $19,176.88 | $19,176.88 |
| Dominguez Channel | 50,857 | 6.78 | $11,174.85 | $11,175.12 |
| Malibu Creek | 32,992 | 10.45 | $2,912.52 | $2,912.84 |
| Marina Del Rey | 1,409 | 244.69 | $101,768.58 | $101,771.02 |
| North Santa Monica Bay | 1,056 | 326.48 | $18,789.13 | $18,776.07 |
| Palos Verdes Peninsula Cities | 14,464 | 23.84 | $2,784.07 | $3,811.41 |
| Rio Hondo/San Gabriel River | 20,416 | 16.89 | $2,056.85 | $2,056.85 |
| Santa Monica Bay J2 & J3 | 34,362 | 10.03 | $7,589.04 | $7,589.44 |
| South Bay Beach Cities | 15,217 | 22.66 | $2,017.35 | $3,672.19 |
| Upper LA River | 309,757 | 1.11 | $10,027.94 | $10,038.99 |
| Upper San Gabriel River | 79,185 | 4.35 | $9,154.55 | $9,154.33 |
| Upper Santa Clara River | 199,811 | 1.73 | $1,154.54 | $1,154.54 |
| **Average** | **70100.24** | **56.10** | **$15,717.19** | **$15,940.81** |
| **Median** | **33677.00** | **10.24** | **$8,371.89** | |

Source: Analysis by Beacon Economics.

[5] Cost estimates are based on Permittees' EWMP estimates as presented under "Method 2" of the LA Water Board Study.
[6] Land ratios were calculated using the included lands as reported in each watershed's annual reports.

**Table 3. Median WMP Capital and O&M Costs for San Bernardino County, Extrapolated by Relative Land Area, (Millions of Dollars, 2024$)**

| | San Bernardino County | |
|---|---|---|
| | 2019$ | Present Value (2024$) |
| Capital, Median | $6,161.71 | **$7,521.60** |
| O&M (20-Yr), Median | $2,210.18 | **$2,697.96** |
| Total Cost, Median | $8,371.89 | **$10,219.56** |

Source: Analysis by Beacon Economics.

**Table 4. Average WMP Capital and O&M Costs for San Bernardino County, Extrapolated by Relative Land Area, (Millions of Dollars, 2024$)**

| | San Bernardino County | |
|---|---|---|
| | 2019$ | Present Value (2024$) |
| Capital, Average | $12,565.65 | **$15,338.89** |
| O&M (20-Yr), Average | $3,263.03 | **$3,983.18** |
| Total Cost, Average | $15,829 | **$19,322.46** |

Source: Analysis by Beacon Economics.

**CAPITAL COSTS** In terms of averages, the estimated capital cost for San Bernardino County is $15.34 billion in today's dollars. However, these averages may include outlier data points, such as the cost of the Marina Del Rey WMP.

In terms of medians, the estimated **capital cost for San Bernardino County is approximately $7.5 billion** in today's dollars.

**O&M COSTS** The average O&M costs for San Bernardino County equal $3.98 billion in today's dollars. These values equate to approximately $200 million for San Bernardino per year. Again, these averages may include outlier data points, such as the costs of the Marina Del Rey WMP. It is more reasonable to consider median costs instead. The estimated median **O&M costs for San Bernardino County equal $2.7 billion over the next 20 years**. This corresponds to annual O&M costs of around $134 million.

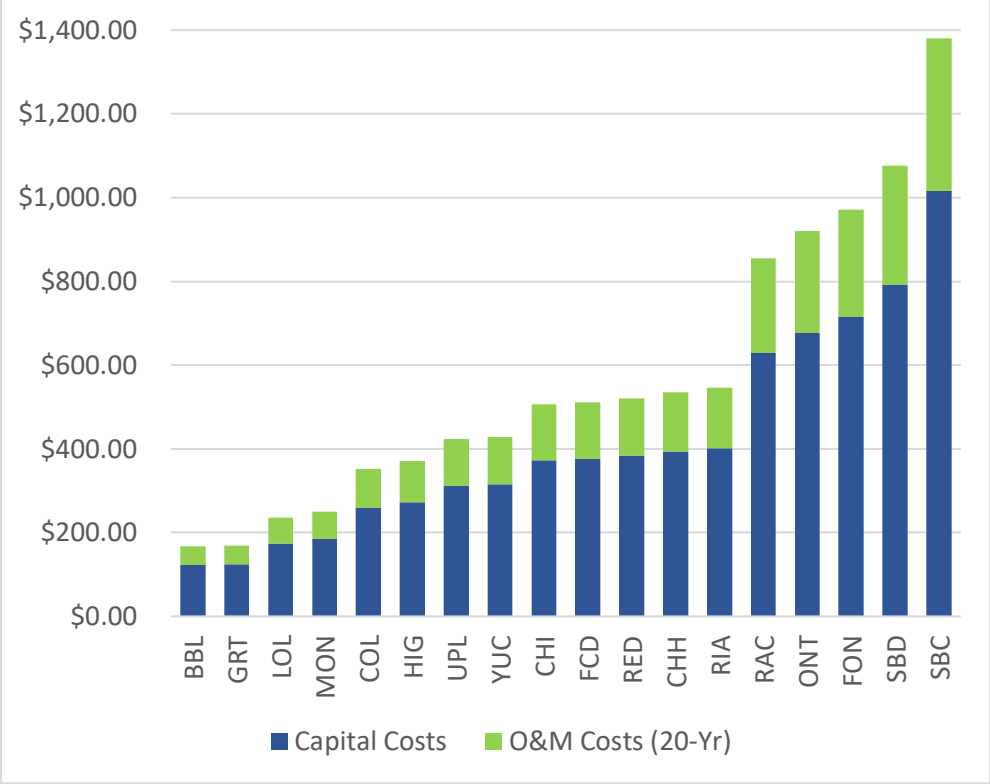
**TOTAL WMP COSTS** Over the next 20 years, it will cost San Bernardino County an average of $19.3 billion to cover the capital and annual O&M costs of developing a WMP. As for the median, over the next 20 years, it will **cost San Bernardino County an estimated $10.2 billion** in median capital and annual O&M costs to develop a WMP.

**Table 5. Estimated WMP Capital and O&M Costs for Agencies within San Bernardino County, Extrapolated by Relative Land Area, (Millions of Dollars, 2024$)**

| San Bernardino County Proposed WMP | | | | | | | |
|---|---|---|---|---|---|---|---|
| Agency | Land Area (Acres) | Population | Cost Share | Costs (in Millions, 2024$) | | | |
| | | | | Capital | O&M (Annual) | O&M (20-Yr) | Total (20-Yr) |
| Big Bear Lake | 4074.24 | 4914 | 1.63% | $122.60 | $2.20 | $43.98 | $166.58 |
| Chino | 14835.2 | 93137 | 4.95% | $372.32 | $6.68 | $133.55 | $505.87 |
| Chino Hills | 21176.45 | 77058 | 5.23% | $393.38 | $7.06 | $141.10 | $534.48 |
| Colton | 9469.38 | 53154 | 3.45% | $259.50 | $4.65 | $93.08 | $352.57 |
| Fontana | 27432.45 | 213851 | 9.51% | $715.30 | $12.83 | $256.58 | $971.88 |
| Grand Terrace | 2255.04 | 12814 | 1.66% | $124.86 | $2.24 | $44.79 | $169.64 |
| Highland | 10562.11 | 55984 | 3.63% | $273.03 | $4.90 | $97.94 | $370.97 |
| Loma Linda | 5487.62 | 25228 | 2.31% | $173.75 | $3.12 | $62.32 | $236.07 |
| Montclair | 3520.64 | 37494 | 2.45% | $184.28 | $3.31 | $66.10 | $250.38 |
| Ontario | 31339.71 | 180717 | 9.00% | $676.94 | $12.14 | $242.82 | $919.76 |
| Rancho Cucamonga | 26851.71 | 173545 | 8.37% | $629.56 | $11.29 | $225.82 | $855.38 |
| Redlands | 21201.09 | 71972 | 5.10% | $383.60 | $6.88 | $137.60 | $521.20 |
| Rialto | 15144.06 | 102985 | 5.34% | $401.65 | $7.20 | $144.07 | $545.72 |
| San Bernardino | 35303.55 | 223230 | 10.53% | $792.02 | $14.20 | $284.10 | $1,076.12 |
| Upland | 9782.02 | 78376 | 4.15% | $312.15 | $5.60 | $111.97 | $424.11 |
| Yucaipa | 16847.42 | 53991 | 4.19% | $315.15 | $5.65 | $113.04 | $428.20 |
| County of SB | 89484.03 | 137778 | 13.51% | $1,016.17 | $18.22 | $364.50 | $1,380.66 |
| District | - | - | 5.00% | $376.08 | $6.74 | $134.90 | $510.98 |
| **Total** | **344,766.72** | **1596228** | **100%** | **$7,521.60** | **$134.90** | **$2,697.96** | **$10,219.56** |

Source: San Bernardino Stormwater Management Program Budget and Cost Sharing Allocation for FY 2024-2025. Analysis by Beacon Economics.

**Figure 1. Estimated WMP Capital and 20-Year O&M Costs for SBC Agencies (Millions of Dollars, 2024$)**




Source: San Bernardino Stormwater Management Program Budget and Cost Sharing Allocation for FY 2024-2025. Analysis by Beacon Economics.

## TRASH COMPLIANCE COSTS

According to the TO, Permittees must choose between two options for trash management:

1) Track 1 requires the installation of **Full Capture Devices (FCDs)** to control trash larger than 5mm in size from priority, designated and equivalent land uses.
2) Track 2 requires the installation of a combination of trash capture systems that achieve equivalency of Full Capture Systems.

Permittees made their track selection several years ago based on requirements set forth in the state's trash policy adopted by the State Water Resources Control Board (SWRCB) in 2015.[7] The state's version of Track 1 trash compliance does not include a requirement for monitoring.

[7] https://www.waterboards.ca.gov/water_issues/programs/trash_control/documentation.html

Instead, the state's trash policy requires the installation, operation, and maintenance of full capture systems. **The trash control requirements set forth in the TO may not be in-line with the state board's trash reduction requirements**. To require Track 1 agencies to monitor their full capture systems is unreasonable, as agencies had not anticipated this new requirement when making their track selection and changing a trash management system once it is up and running is costly.

Each Track 1 Permittee in San Bernardino will incur expenses related to the following tasks:

a. Initial Assessment – Develop an On-Land Visual Trash Assessments (OVTA) plan and estimate trash generation rates from non-protected full capture systems.
b. Monitoring Efforts – Estimate trash generation rate reduction and conduct inspections.
c. Increased Annual Reporting Efforts – GIS map updates, annual report templates, and coordination with O&M.

An initial assessment is expected to cost a flat fee of $30,000. Monitoring efforts are expected to cost each Track 1 Permittee $15,000 annually and increased annual reporting efforts are expected to cost each Permittee $4,000 annually in additional expenses.[8] For the county's Track 1 Permittees,[8] **these three tasks will cost a combined $4.92 million over the next 20 years**.

## ADDITIONAL INSPECTION COSTS

Each Permittee must have an effective inspection program for industrial, commercial, and construction sites to minimize or reduce the pollutant discharge into MS4s. The TO specifies inspection frequencies for different priority sites:

- **High Priority**: Inspected once a year.
- **Medium Priority**: Inspected once every two years.
- **Low Priority**: Inspected once every five years.

Permittees can, however, propose alternative inspection schedules.

[8] Based on consultation with stormwater program expert within Riverside County.

## INDUSTRIAL INSPECTION COSTS

The current permit has the same schedule of inspections as specified in the TO for High and Medium Priority sites. However, the current permit requires that Low Priority sites be inspected once every permit term. Permit terms can last longer than five years; the current term has extended to 14 years. The TO specifies that Low Priority sites be inspected once every five years. The new industrial inspection specifications will impact agencies' Low Priority industrial facilities.

**Table 6. Industrial Facilities in San Bernardino Agencies, Fiscal Year 2022-2023**

| San Bernardino County Industrial Facilities (FY 2022-2023) | | | |
|---|---|---|---|
| **0-99** | **100-199** | **200-499** | **500-999** |
| Big Bear Lake | Chino | Fontana | Ontario |
| Chino Hills | Colton | County of SB | San Bernardino |
| Grand Terrace | Montclair | | |
| Highland | Rancho Cucamonga | | |
| Loma Linda | Rialto | | |
| Redlands | | | |
| Upland | | | |
| Yucaipa | | | |

Source: San Bernardino County Stormwater Program Annual Report for 2022-2023. Analysis by Beacon Economics.

In the 2022-2023 fiscal year, of the nearly 3,000 industrial facilities located within the jurisdiction of the 17 Co-Permittees, 3.3% reported deficiencies. Although the number of industrial facilities has increased by 84% since the 2006-2007 fiscal year, **the percentage of inspections finding deficiencies has dropped from approximately 60% to less than 20%** over the last 15 years.

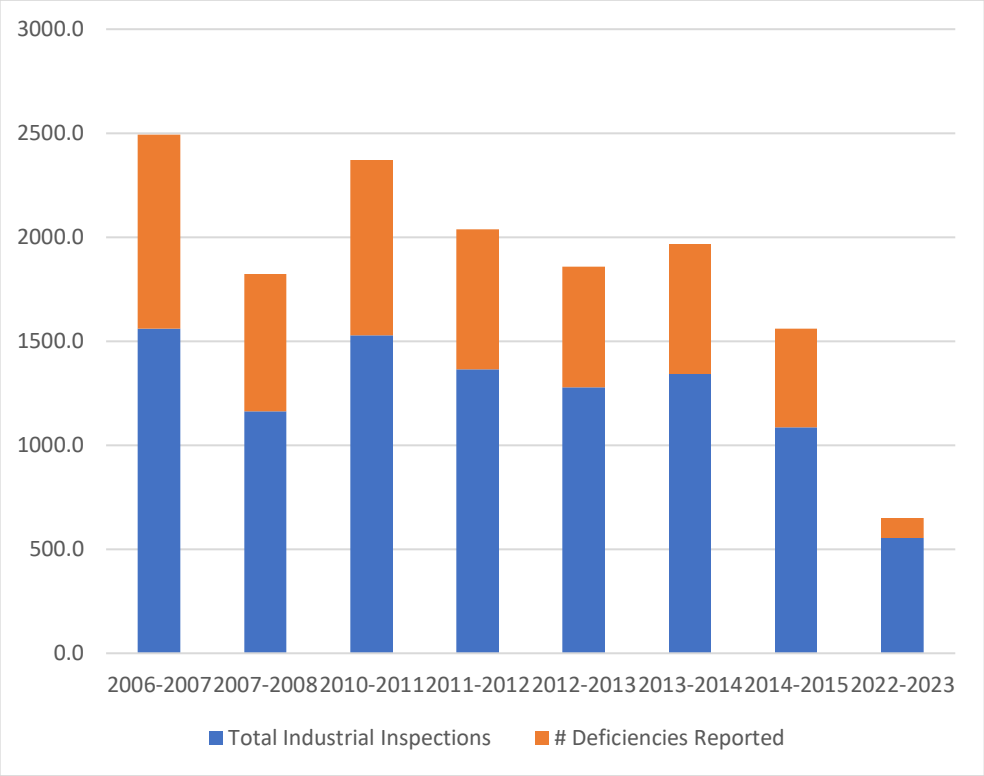
Moreover, **the severity of deficiencies has substantially decreased over time**. In the 2006-2007 fiscal year, over 90% of deficiencies required some level of enforcement action, whereas in the 2022-2023 fiscal year, over 90% of deficiencies required no enforcement action.

## Table 7. Industrial Facility Inspections and Deficiencies in San Bernardino Agencies, FY 2006-2007 through FY 2022-2023

| San Bernardino County Industrial Facility Inspections and Deficiencies | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **2006-2007** | **2007-2008** | **2010-2011** | **2011-2012** | **2012-2013** | **2013-2014** | **2014-2015** | **2022-2023** |
| Inspections | 1561 | 1162 | 1527 | 1364 | 1280 | 1344 | 1085.0 | 554.0 |
| Deficiencies | 933 | 661 | 845 | 674 | 578 | 623 | 474.0 | 96.0 |
| **% Deficient** | **59.8%** | **56.9%** | **55.3%** | **49.4%** | **45.2%** | **46.4%** | **43.7%** | **17.3%** |

Source: San Bernardino County Stormwater Program Annual Reports retrieved from https://sbcountystormwater.org/government/resources/. Analysis by Beacon Economics.

## Figure 2. Industrial Facility Inspections and Deficiencies in San Bernardino Agencies, FY 2006-2007 through FY 2022-2023




Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.

**Table 8. Industrial Facility Deficiencies and Enforcement Severity in San Bernardino Agencies, FY 2006-2007 through FY 2022-2023**

| San Bernardino County Agencies, Industrial Inspection Actions by Severity (Low to High) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2006 - 2007 | 2007-2008 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | 2022-2023 |
| None Required | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| Verbal w Educ/Outreach | 0.1 | 0.2 | 0.2 | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 |
| NOC | 0.8 | 0.5 | 0.1 | 0.7 | 0.8 | 0.8 | 0.7 | 0.5 |
| NOV | 0.1 | 0.2 | 0.0 | 0.3 | 0.1 | 0.1 | 0.1 | 0.0 |
| Require Clean Up or Charge Clean Up Costs | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Admin Order | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Stop Work Order | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Admin Civil Action | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Refer to the RWQCB | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.

Table 9 presents data on the share of High, Medium, and Low Priority industrial facilities within each agency in San Bernardino. For example, in fiscal year 2014-2015, approximately 20% of industrial facilities in Highland were High Priority and the remaining 80% were Low Priority.

Agencies where most industrial facilities are already classified as High or Medium Priority will not experience see as significant a change with the new industrial inspection requirements set forth in the TO as those agencies where most industrial facilities are classified as Low Priority.

- Most industrial facilities in Colton, Chino Hills, Redlands, Rialto, Upland, and Yucaipa have been historically classified as High Priority.[9] Most industrial facilities in Big Bear Lake, Grand Terrace, Loma Linda, Montclair, Rancho Cucamonga, the City of San Bernardino, and the unincorporated regions of San Bernardino County have historically been classified as Medium Priority. The anticipated impact of additional industrial inspections will be relatively **low** for these agencies.

[9] Industrial facilities in the Flood Control District have also historically been classified primarily as High Priority, for the annual reports where data is available.

- Most industrial facilities in Chino, Fontana, Highland, and Ontario have historically been classified as Low Priority. The anticipated impact of additional industrial inspections will be relatively **high** for these agencies.

- **All the agencies that will be disproportionately impacted by the new industrial inspection requirements house disadvantaged communities.**[10] Of these four agencies, Fontana and Ontario will likely see a disproportionate impact, as they each have a significant number of industrial facilities, as shown in Table 6.

**Table 9. Heat Map of Industrial Facilities in San Bernardino by Priority Level as a Share of All Facilities within Agency, FY 2006-2007 through FY 2014-2015**

| San Bernardino County Industrial Facilities by Priority Level | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FY 2006-2007 | | | FY 2007-2008 | | | FY 2010-2011 | | | FY 2011-2012 | | | FY 2012-2013 | | | FY 2013-2014 | | | FY 2014-2015 | | |
| | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L |
| BBL | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.0 | 0.1 | 0.9 | 0.0 | 0.0 | 0.9 | 0.1 | 0.0 | 0.8 | 0.2 | 0.0 | 0.8 | 0.2 |
| CHI | 0.1 | 0.1 | 0.8 | 0.1 | 0.2 | 0.7 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 |
| CHH | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| COL | 1.0 | 0.0 | 0.0 | 0.5 | 0.5 | 0.0 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.6 | 0.3 | 0.1 | 0.6 | 0.3 | 0.1 | 0.4 | 0.5 | 0.1 |
| FON | 0.1 | 0.3 | 0.7 | 0.1 | 0.5 | 0.4 | 0.0 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3 | 0.6 |
| GRT | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 |
| HIG | 0.0 | 1.0 | 0.0 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.0 | 0.0 | 1.0 | 0.2 | 0.0 | 0.8 |
| LOL | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 |
| MON | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.5 | 0.2 | 0.3 | 0.6 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.4 | 0.5 | 0.2 |
| ONT | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 |
| RAC | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 |
| RED | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.6 | 0.4 | 0.0 | 0.6 | 0.4 | 0.0 |
| RIA | 0.3 | 0.3 | 0.4 | 0.5 | 0.2 | 0.3 | 0.9 | 0.1 | 0.0 | 0.9 | 0.1 | 0.0 | 0.7 | 0.1 | 0.2 | 0.7 | 0.1 | 0.3 | 0.7 | 0.1 | 0.3 |
| SBD | 0.2 | 0.3 | 0.6 | 0.1 | 0.0 | 0.9 | 0.1 | 0.6 | 0.3 | 0.0 | 0.6 | 0.4 | 0.0 | 0.6 | 0.4 | 0.0 | 0.6 | 0.4 | 0.0 | 0.6 | 0.4 |
| UPL | 0.4 | 0.3 | 0.3 | 0.3 | 0.5 | 0.3 | 0.4 | 0.1 | 0.5 | 0.3 | 0.1 | 0.6 | 0.5 | 0.2 | 0.3 | 0.5 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 |
| YUC | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| SBC | 0.6 | 0.4 | 0.1 | 0.5 | 0.4 | 0.1 | 0.9 | 0.1 | 0.0 | 0.8 | 0.2 | 0.0 | 0.6 | 0.3 | 0.1 | 0.4 | 0.5 | 0.1 | 0.4 | 0.5 | 0.1 |
| FCD | 0.8 | 0.2 | 0.0 | 0.9 | 0.1 | 0.0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.
Note: H = High Priority, M = Medium Priority, L = Low Priority facilities

[10] Based on 2022 Census tracts. Data retrieved from: https://oehha.ca.gov/calenviroscreen/sb535. Parts of Chino are considered disadvantaged.

On average, industrial facilities within San Bernardino agencies have historically been classified as follows: 788 High Priority, 1136 Medium Priority, and 1377 Low Priority. Due to the change in the frequency of inspections (from once per permit term, to once every five years) required for Low Priority facilities set forth in the TO, these industrial facilities will face higher inspection costs.

Considering an inspection in San Bernardino costs $250 per visit, and independent of the hours of inspection conducted within a visit, inspection costs are expected to rise by $44,274 annually.

Inspection costs are expected to rise by $885,490 over the next 20 years, combined for agencies in San Bernardino.

**Table 10. Estimate of Additional Industrial Inspection Costs in San Bernardino County**

| | High (Avg) | Med (Avg) | Low (Avg) |
|---|---|---|---|
| Total Facilities | 788 | 1136 | 1377 |
| Current Freq/year | 1 | 0.5 | 0.0714286 |
| New (TO) Freq/year | 1 | 0.5 | 0.2 |
| Inspection Cost | $250 | $250 | $250 |
| Current Insp. Cost | $197,000 | $142,000 | $24,597 |
| New Insp. Cost | $197,000 | $142,000 | $68,871 |
| Added Cost (Annual) | $0 | $0 | $44,274 |
| **Added Cost (20-Yr)** | $0 | $0 | **$885,490** |

Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.

On average, between 15% and 25% of industrial facilities in San Bernardino have historically had general use permits, and between 75% and 85% of facilities have had non-general permits.

**Table 11. Industrial Facilities by Permit Type for San Bernardino County Agencies**

| | San Bernardino County Agencies, Industrial Permits by Type | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2006-2007 | 2007-2008 | 2010-2011 | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | Average |
| General | # Permits | 709 | 635 | 667 | 592 | 589 | 555 | 531 | **611** |
| | Share of Total | 24.0% | 21.4% | 19.9% | 18.0% | 17.2% | 15.7% | 14.8% | **18.7%** |
| Non-General | # Permits | 2244 | 2332 | 2684 | 2704 | 2842 | 2979 | 3046 | **2690** |
| | Share of Total | 76.0% | 78.6% | 80.1% | 82.0% | 82.8% | 84.3% | 85.2% | **81.3%** |
| | **Total** | **2953** | **2967** | **3351** | **3296** | **3431** | **3534** | **3577** | **3301** |

Source: San Bernardino County Stormwater Program Annual reports. Analysis by Beacon Economics.

While under the current permit, industrial facilities with general use permits do not have a specified frequency of inspection different to that specified by their priority level, under the TO, generally permitted industrial facilities will be considered High Priority. As such, they will be subject to annual inspections.

Inspection costs will increase for Medium and Low Priority industrial facilities with general use permits, but not for High Priority facilities as they are currently subject to annual inspections. The additional costs for new inspections of Low Priority industrial facilities have already been accounted for above. If 18.7% of Medium Priority facilities are general permit holders, we estimate that this requirement change will adversely impact around 212 facilities. Considering that the cost of an inspection is $250 in San Bernardino, this change will equate to additional costs of $53,108 per year, or $1,062,160 over the next 20 years.

Overall, the changes presented in the TO will increase industrial inspection costs by **over $1.94 million in the next 20 years**, due to more frequent inspections of Low Priority industrial facilities and of facilities with general use permits.

## COMMERCIAL INSPECTION COSTS

Like industrial inspections, commercial inspections are expected to increase in frequency—and in turn, in costs—in San Bernardino County, based on the requirements set forth in the draft permit.

**Table 12. Commercial Facilities in San Bernardino Agencies, Fiscal Year 2022-2023**

| San Bernardino County Commercial Facilities (FY 2022-2023) | | | | | |
|---|---|---|---|---|---|
| **0-99** | **100-199** | **200-499** | **500-999** | **1000-1999** | **2000+** |
| Grand Terrace | Big Bear Lake<br>Highland<br>Loma Linda | Chino Hills<br>Rancho Cucamonga<br>Upland<br>Yucaipa | Chino<br>Colton<br>Fontana<br>Montclair<br>Rialto<br>SB County | | Ontario<br>Redlands<br>San Bernardino |

Source: San Bernardino County Stormwater Program Annual Report for 2022-2023. Analysis by Beacon Economics.

**The share of commercial inspections reporting deficiencies in San Bernardino has decreased substantially over time**. Whereas historically (between fiscal year 2005-2006 and fiscal year 2014-2015), about 30% of commercial facility inspections have reported deficiencies, in the most recent fiscal year 2022-2023 only about 10% of commercial facility inspected reported deficiencies.

Table 13 presents data on the share of High, Medium, and Low Priority commercial facilities within each agency in San Bernardino. For example, in fiscal year 2014-2015, approximately 20% of commercial facilities in Highland were Medium Priority and 70% were Low Priority.

Agencies where most commercial facilities are already classified as High or Medium Priority will not experience as significant a change with the new commercial inspection requirements set forth in the TO compared to those agencies where most commercial facilities are currently classified as Low Priority.

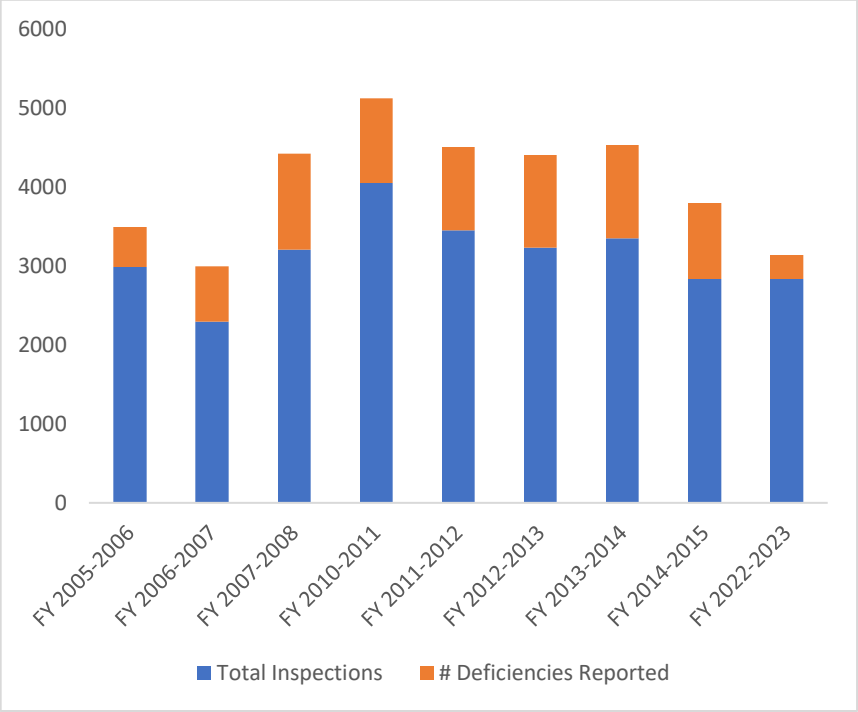
- Most commercial facilities in Chino Hills, Montclair, Rancho Cucamonga, Redlands, and Rialto have been historically classified as High Priority. Most

commercial facilities in Big Bear Lake, Fontana, Loma Linda, Ontario,[11] and the unincorporated parts of San Bernardino County have historically been classified as Medium Priority. The anticipated impact of additional commercial inspections will be relatively **low** for these agencies.

- Most commercial facilities in Chino, Colton, Highland, Loma Linda, Ontario, Upland, and Yucaipa have historically been classified as Low Priority. The anticipated impact of additional commercial inspections will be relatively **high** for these agencies.

- **All but one of the agencies that will be disproportionately impacted by the new commercial inspection requirements encompass disadvantaged communities**.[12] Of these four agencies, Ontario will likely be impacted most, followed by Chino and Colton, as they each have a substantial number of commercial facilities, as shown in Table 12.

**Figure 3. Commercial Facility Inspections and Deficiencies in San Bernardino Agencies, FY 2005-2006 through FY 2022-2023**




Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.

[11] Half of the industrial facilities in Loma Linda and Ontario are classified as Medium Priority, and half are classified as Low Priority.

[12] Based on 2022 Census tracts. Data retrieved from: https://oehha.ca.gov/calenviroscreen/sb535. Parts of Chino, Colton, Highland, Loma Linda, Ontario, and Upland are classified as disadvantaged.

On average, commercial facilities within San Bernardino agencies have been classified as follows: 2,417 High Priority, 3,501 Medium Priority, and 4,242 Low Priority. Due to the change in frequency of inspections (from once per permit term, to once every five years) required for Low Priority facilities set forth in the TO, these commercial facilities will face higher inspection costs.

Considering an inspection in San Bernardino costs $250 per visit, and independent of the hours of inspection conducted within a visit, **inspection costs are expected to rise by $136,336 annually**.

**Inspection costs are expected to rise by over $2.7 million** over the next 20 years, combined for agencies in San Bernardino.

**Table 13. Heat Map of Commercial Facilities in San Bernardino by Priority Level as a Share of All Facilities within Agency, FY 2006-2007 through FY 2014-2015**

| San Bernardino County Commercial Facilities by Priority Level | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FY 2006-2007 | | | FY 2007-2008 | | | FY 2010-2011 | | | FY 2011-2012 | | | FY 2012-2013 | | | FY 2013-2014 | | | FY 2014-2015 | | |
| | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L | H | M | L |
| BBL | 1.0 | 0.0 | 0.0 | 0.2 | 0.8 | 0.0 | 0.2 | 0.8 | 0.0 | 0.2 | 0.8 | 0.0 | 0.2 | 0.8 | 0.1 | 0.2 | 0.8 | 0.1 | 0.2 | 0.8 | 0.1 |
| CHI | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 | 0.0 | 0.3 | 0.7 |
| CHH | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.7 | 0.3 | 0.0 | 0.3 | 0.3 | 0.4 | 0.7 | 0.3 | 0.0 |
| COL | 0.0 | 0.3 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.0 | 0.3 | 0.7 | 0.2 | 0.1 | 0.7 | 0.0 | 0.3 | 0.7 |
| FON | 0.6 | 0.3 | 0.1 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.1 | 0.7 | 0.3 | 0.1 | 0.6 | 0.3 | 0.2 | 0.6 | 0.2 | 0.2 | 0.6 | 0.2 |
| GRT | 0.2 | 0.5 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 |
| HIG | 0.6 | 0.1 | 0.3 | 0.6 | 0.2 | 0.2 | 0.6 | 0.2 | 0.2 | 0.5 | 0.3 | 0.2 | 0.4 | 0.4 | 0.2 | 0.0 | 0.3 | 0.7 | 0.0 | 0.2 | 0.7 |
| LOL | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 | 0.0 | 0.5 | 0.5 |
| MON | 0.2 | 0.2 | 0.7 | 0.4 | 0.4 | 0.2 | 0.4 | 0.4 | 0.2 | 0.4 | 0.4 | 0.2 | 0.4 | 0.4 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 |
| ONT | 0.5 | 0.3 | 0.1 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.1 | 0.5 | 0.4 | 0.1 | 0.4 | 0.5 | 0.1 | 0.4 | 0.5 |
| RAC | 0.4 | 0.1 | 0.5 | 0.4 | 0.2 | 0.5 | 0.4 | 0.2 | 0.5 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.3 | 0.6 | 0.2 | 0.2 |
| RED | 0.8 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.8 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.2 |
| RIA | 0.1 | 0.1 | 0.8 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.2 | 0.1 | 0.7 | 0.5 | 0.2 | 0.3 | 0.5 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 |
| SBD | 0.7 | 0.1 | 0.2 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.1 | 0.4 | 0.4 | 0.1 | 0.4 | 0.4 | 0.1 | 0.4 | 0.4 | 0.1 | 0.4 | 0.4 |
| UPL | 0.6 | 0.1 | 0.2 | 0.7 | 0.1 | 0.2 | 0.7 | 0.1 | 0.2 | 0.8 | 0.0 | 0.1 | 0.6 | 0.3 | 0.1 | 0.1 | 0.1 | 0.8 | 0.1 | 0.1 | 0.8 |
| YUC | 0.0 | 0.3 | 0.7 | 0.0 | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 | 0.0 | 0.4 | 0.6 |
| SBC | 0.3 | 0.5 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 | 0.2 | 0.4 | 0.4 | 0.2 | 0.2 | 0.5 | 0.3 | 0.2 | 0.5 | 0.3 |
| FCD | 1 | 1 | 0 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.
Note: H = High Priority, M = Medium Priority, L = Low Priority facilities

**Table 14. Estimate of Additional Commercial Inspection Costs in San Bernardino County**

| | High (Avg) | Med (Avg) | Low (Avg) |
|---|---|---|---|
| Total Facilities | 2417 | 3501 | 4242 |
| Current Freq/year | 1 | 0.5 | 0.0714286 |
| New (TO) Freq/year | 1 | 0.5 | 0.2 |
| Inspection Cost | $0 | $250 | $250 |
| Current Insp. Cost | $0 | $437,607 | $75,742 |
| New Insp. Cost | $0 | $437,607 | $212,079 |
| Added Cost (Annual) | $0 | $0 | $136,336 |
| **Added Cost (20-Yr)** | $0 | $0 | **$2,726,724** |

Source: San Bernardino County Stormwater Program Annual Reports. Analysis by Beacon Economics.

**Restaurants** However, the TO brings another substantial change to commercial facility inspections. Per the current permit, "restaurants are inspected at least once during the MS4 permit cycle,"[13] as these establishments engage with fats, oil, and grease (FOG), pollutants that are the most impactful on receiving waters.

According to the TO, "the Permittees must inspect eating or drinking establishments annually or cause such inspections to occur on their behalf."[14] The expansion of the definition of restaurants to "eating and drinking establishments" will generate substantial costs for businesses in the county.

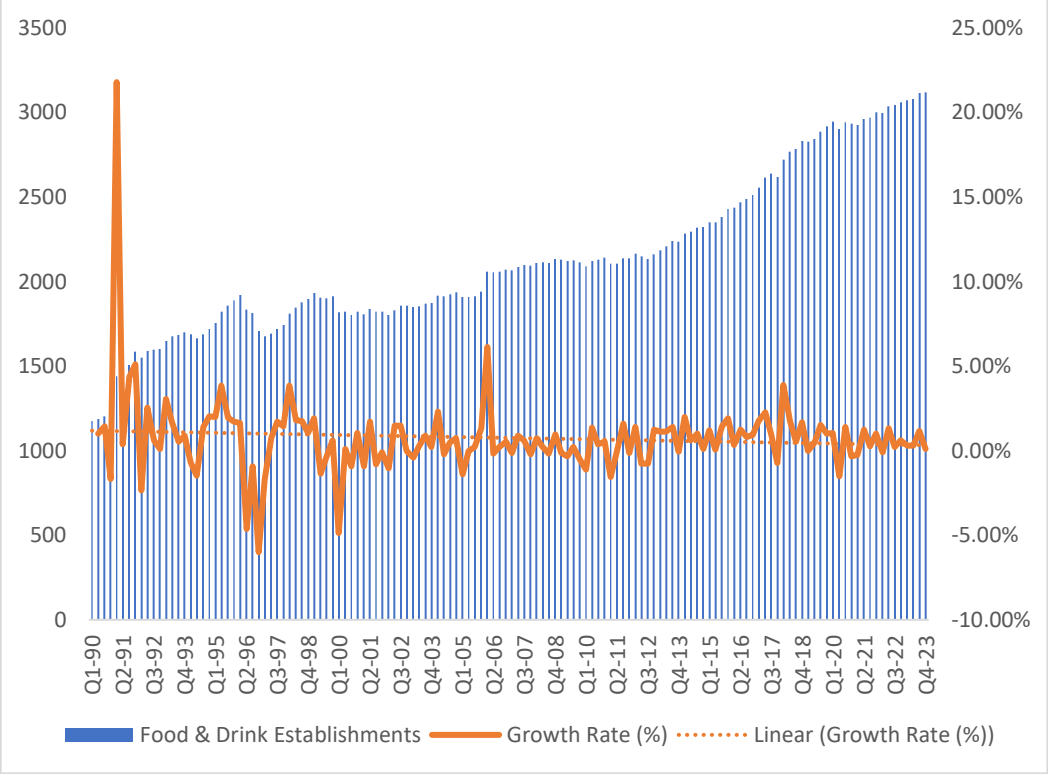
There are currently 1,178 full-service restaurants, 1,847 limited-service restaurants and 93 drinking places in San Bernardino County, according to the latest (fourth quarter 2023) U.S. Census Bureau data. Assuming these establishments are distributed evenly across the county, we scale the number of establishments based on relative population ratio to the portions of the county (agencies plus unincorporated portions of the county that are

[13]https://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2010/10_033_rc_ms4_permit_01_29_10.pdf

[14]https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/docs/2024/tentative_ms4_permit_2-29-24.pdf

currently Permittees) to estimate the number of food and drink establishments within the Santa Ana River Watershed.

**Figure 4. Food and Drink Establishments in San Bernardino County, Q1 1990 – Q4 2023**




Source: U.S. Census Bureau. Analysis by Beacon Economics.

According to the 2020 decennial census, San Bernardino County has a population of 2,181,654. The 17 agencies (not including the Principal Permittee) of the county have a combined population of 1,596,228, representing approximately 73.17% of the county's total population. Based on this population ratio, we estimate there to be **2,282 food and drink establishments in San Bernardino that would be subject to the MS4 TO**.

We assume for simplicity and consistency[15] with previous parts of the report, that the number of restaurants does not grow (although historically, the number of food and drink establishments has grown at 0.6% per year) in the next 20 years.

Considering that an inspection costs $250 per visit in San Bernardino, and the current permit term has extended for 14 years, the additional annual cost of requiring annual inspections for food and drink establishments equals $529,726. **The 20-year cost of**

[15] This is also reasonable, given that the newly added costs will likely hinder growth.

**requiring annual inspections for food and drink establishments is approximately $10.6 million**.

**Table 15. Estimate of Additional Commercial Inspection Costs in San Bernardino County**

| Inspection Freq. | Annual Cost | Total Cost (20-Yr) | Added Costs |
|---|---|---|---|
| 1x per permit term | $ 40,748.17 | $ 814,963.34 | |
| 1x per year | $ 570,474.34 | $ 11,409,486.77 | **$ 10,594,523.43** |

Overall, adding the 20-year marginal cost of $2.7 million for higher frequency inspections of Low Priority commercial facilities (with the 20-year marginal cost of $10.6 million for higher frequency inspections for food and drink establishments), we arrive at a **20-year cost of $13.3 million for San Bernardino County**.

This control measure would **disproportionately impact disadvantaged and tourist communities within Permittee counties**. Significant portions of San Bernardino County are classified as Disadvantaged Communities (DACs) or as Severely Disadvantaged Communities (SDACs) and may be adversely impacted by the increased regulations on restaurants. For example, the City of Big Bear Lake in San Bernardino County is primarily a tourist community, and restaurants make up a significant element of the local economy. Restaurants in the state already face financial burdens due to existing regulations and new higher minimum wages. The proposed classification of all food and drink establishments as High Priority will place an additional burden on the cities' economies.

## CONSTRUCTION SITE INSPECTION COSTS

Currently, the construction site inspection frequency is as follows:

- For High Priority sites: eight times per year (once per month during the wet season)
- For Medium Priority sites: twice per wet season
- For Low Priority sites: once per wet season

The TO specifies the same inspection frequency for Medium and Low Priority sites, however the inspection frequency for High Priority construction sites is reduced to four times per year (once every two months during the wet season).
This change should reduce the inspection costs faced by agencies. However, at the same time, there is a change in how priority levels are determined.

High Priority sites are currently defined as those disturbing 50 acres of soil and greater, Medium Priority sites are those disturbing between 20 and 50 acres, and Low Priority sites are those disturbing less than 20 acres.

With the TO, High Priority sites will include any construction site disturbing 20 acres of soil or more, Medium Priority sites are those disturbing between five and 20 acres, and Low Priority sites are those disturbing less than five acres.

These two changes (lower frequency inspections for High Priority sites and lower threshold acreage to be defined as High Priority) will have opposing effects on costs. We assume for simplicity that these roughly cancel each other out.

## NEW DEVELOPMENT & SIGNIFICANT REDEVELOPMENT COSTS

The MS4 permit requirements are designed to reduce the discharge of pollutants from new developments and significant redevelopment projects. Permittees must use source control measures (e.g. street sweepers), structural control measures, and treatment control measures (e.g. bioswale) in their designs. These measures are designed to prevent or reduce the discharge of pollutants into the receiving waters.

### ELIMINATION OF GREEN STREETS GUIDANCE

Although there are several changes in the TO that increase development costs, the highest potential cost impact on developers is likely to be the change to road requirements.

The proposed elimination of EPA Green Streets Guidance and, in turn, the inclusion of roadway projects as priority projects triggers the requirement to prepare a **Water Quality Management Plan (WQMP)** which could **disproportionately affect roadway improvement projects in San Bernardino County**. As most roadway projects in these regions are improvements to existing infrastructure, there is an inherent limitation on space available to incorporate additional water quality infrastructure.

In addition to the limitation on space, construction costs are currently high, which is generally true across the nation (see figures below), and the new requirements would place an additional cost on development and redevelopment projects. The new

requirements **would likely delay construction**, presenting additional opportunity costs that are difficult to quantify.

**Figure 5a. Average Weekly Wage Construction in the United States**

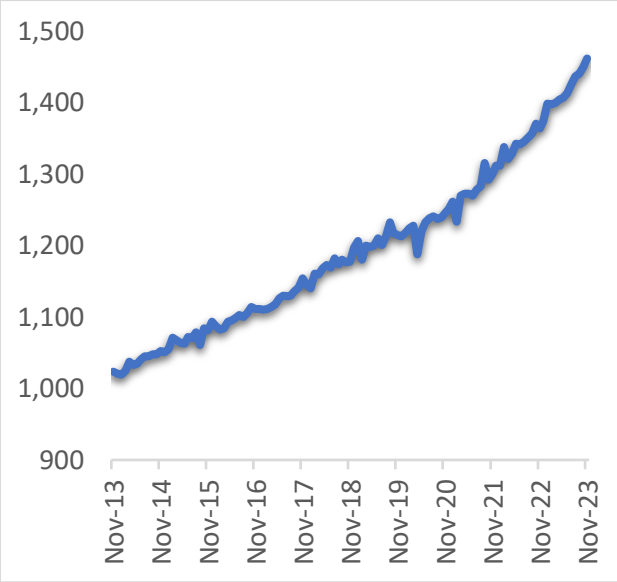
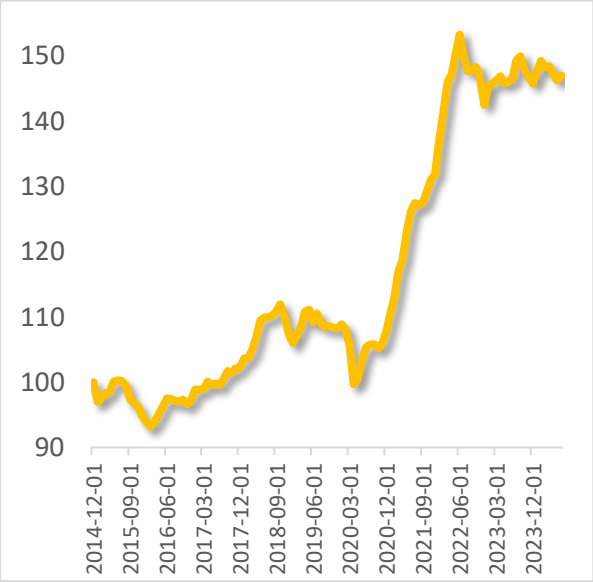



**Figure 5b. Producer Price Index: Inputs to Industries: Net Inputs to Highways and Streets, Goods (Dec 2014 = 100), United States**




Source: U.S. Bureau of Labor Statistics, Average Weekly Earnings of All Employees, Construction [CEU2000000011], retrieved from FRED, Federal Reserve Bank of St. Louis; U.S. Bureau of Labor Statistics, Producer Price Index by Commodity: Inputs to Industries: Net Inputs to Highways and Streets, Goods [WPUIP2312311], retrieved from FRED, Federal Reserve Bank of St. Louis. Analysis by Beacon Economics.

**CASE STUDY 1**[16] As an example, a $4 million project in San Bernardino that would not have triggered a WQMP requirement under the current permit (due to the project not extending beyond 0.5 miles) may now require a WQMP with BMP costs of over $200,000, not including regular maintenance costs.[17] **This represents a 5% increase in construction costs**.

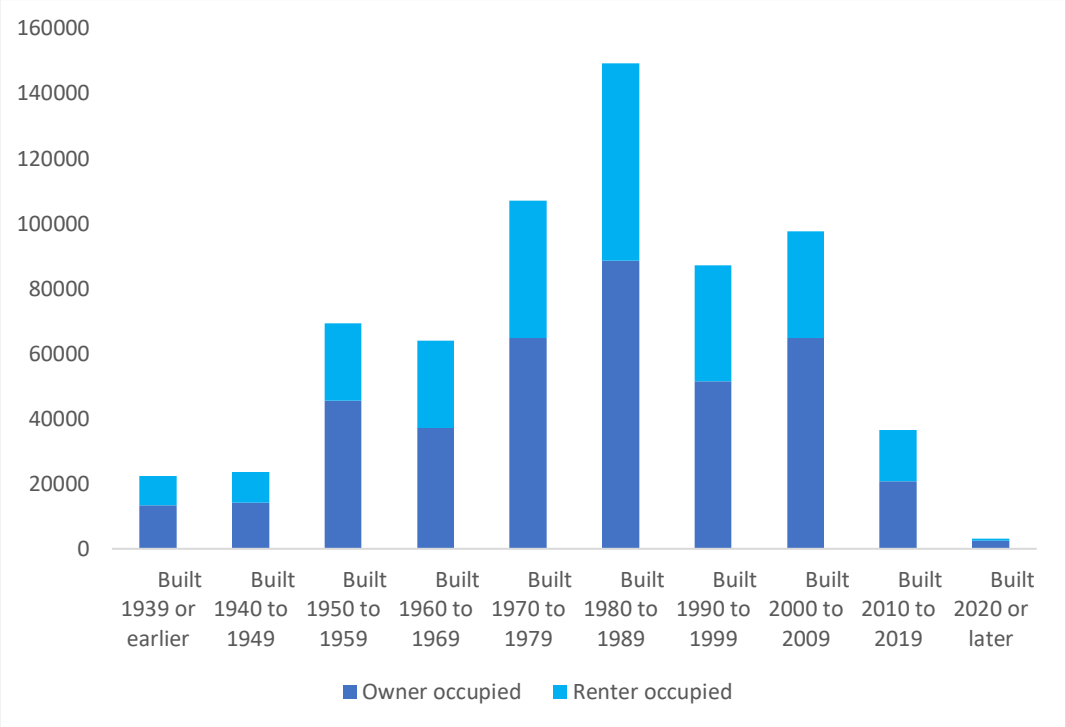
However, this figure cannot be applied to all projects. Each project, depending on its dimensions, location, and surrounding infrastructure, has different inherent needs for water treatment. Currently, the permit requirements allow for projects to be evaluated on a case-by-case basis through feasibility studies. With the new TO, projects surpassing 5,000 square feet will all require a WQMP (and in turn, BMPs), regardless of the feasibility or specific conditions surrounding the project.

[16] Case studies are based on consultation with stormwater program expert within San Bernardino County.
[17] Costs are highly dependent on the type of project. Some projects require infiltration methods while others do not. BMP costs vary based on the treatment method required for a particular project.

**CASE STUDY 2** As another example, a development of 29 single homes spanning a land area of 40 feet by 3,620 feet (where each parcel is 125 feet) would currently require no BMPs in San Bernardino. The same development under the new TO would require 29 BMPs. With a rough approximation of cost for a BMP at $20,000 to $30,000, which varies depending on the type of BMP implemented, **this permitting change results in a cost increase of roughly $725,000, or $25,000 per home**.

Again, this figure may be greater for other projects of the same size, depending on the location and other factors that may necessitate a different BMP for water treatment. It should be noted that if the land area of 40 feet by 3,620 feet was instead used for a single project, it would require four BMPs, both under the current permit as well as under the newly proposed permit.

**Figure 6. Residential Construction in San Bernardino County over Time**



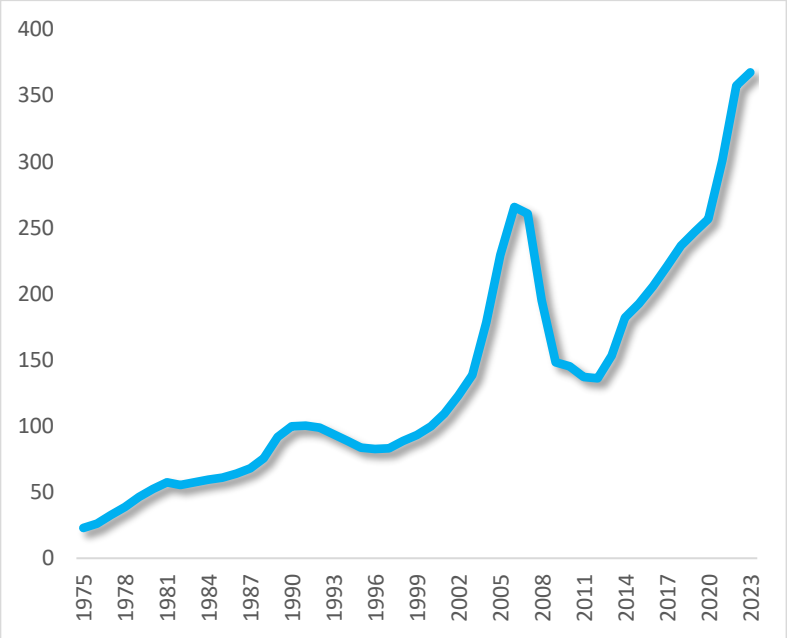

Source: U.S. Census Annual Community Survey (ACS) 5-year estimates. Analysis by Beacon Economics.

For simplicity, assuming that single-family homes are all built in similarly sized lots, with similarly sized parcels, and the existing road and environmental conditions surrounding them are similar, we can extrapolate the figures from Case Study 2 to estimate that the overall increase in housing construction costs will be roughly $27.61 million in the county

per year. **Over 20 years, this would add up to over $552.2 million** in additional single family home construction costs.

Additional residential construction costs are especially problematic given the drop in construction over time, as shown in Figure 6 above. With limited residential housing supply, house prices continue to rise in the county (see Figure 7).

**Figure 7. Home Price Index in San Bernardino County: 1975 to 2023**




Source: U.S. Federal Housing Finance Agency, All-Transactions House Price Index for San Bernardino County, CA [ATNHPIUS06065A], retrieved from FRED, Federal Reserve Bank of St. Louis. Analysis by Beacon Economics.

Moreover, since municipalities typically do projects on a larger scale, such as the installation of ADA ramps, this proposed change may adversely affect their ability to complete projects in a timely or cost-effective manner.

## DEFINITION OF IMPERVIOUS SURFACE

Further, the **new definition of "imperviousness" will trigger WQMPs** for individual homes, trails projects, and other small projects.

The definition of Impervious Surface found in the glossary includes virtually any surface that is "cleared, graded, graveled, paved." This essentially requires any surface on a construction site to be considered impervious regardless of its future condition. Newly

developed parks, landscapes, and gardens that would be effective infiltration areas for years to come would be considered impervious, if during their construction the site is cleared or graded. This new definition thus unfairly increases the size of post-construction BMP treatment, impacting the space and funding available for the development project. The WQMP requirements could easily crush the economic vitality and available resources for these small projects.

### CHANGES TO HYDROMODIFICATION CHANNEL EXEMPTIONS

Stormwater from urban areas can cause stream channel modifications, either through accelerated erosion or channel engineering to prevent erosion. Mitigating for hydromodification can require the setting aside of land for large basins. Under the current permit, developers may be relieved from mitigation requirements, based on hydromodification susceptibility maps that have been submitted by the counties and incorporated into their guidance documents.

**The proposed removal of this exemption poses an additional and entirely unnecessary cost to developers**, in both the public and private sector, analogous to the additional development costs associated with the proposed removal of the Green Streets guidance.

## OTHER CONCERNS AND COSTS

### DRY WEATHER FLOWS

The TO establishes discharge prohibitions aimed at eliminating dry weather flows into the Santa Ana River. However, the San Bernardino Valley Municipal Water District (MWD) has already taken steps to eliminate dry weather flows in certain critical sub-watershed areas. The **San Bernardino MWD is leading a large-scale habitat conservation plan**, including multiple tributary restoration projects along the Santa Ana River. The conservation plan redistributes water from the Riverside treatment plant to these tributaries.

Currently, these tributaries have flows and are **crucial habitats for key aquatic species, some of which are federally threatened**. These species include the western pond turtle, Santa Ana sucker, and Arroyo chub (pictured below).

Photo credit: Oregon Dept. of Fish & Wildlife; Santa Ana Watershed Project Authority; Zack Abbey.

A significant concern of the TO is the **potential impact of the new prohibitions on the protection of these aquatic species**, as the new MS4 requirements could conflict with the San Bernardino MWD's ongoing efforts. Because of the naturally occurring "background" bacterial levels in some stream channels, there could be an excess of numeric limits as set forth in the TO, even with the introduction of clean or recycled water. Eliminating dry weather flows into some of these tributaries could negatively impact these species.

The current MS4 permit appears to prioritize recreational uses (Rec) over other beneficial uses in the basin plan, such as the protection of rare or spawning habitats. In a dry climate like ours, the treatment plants along the river have minimum discharge requirements to ensure sufficient water for aquatic wildlife. Therefore, if water is diverted from the river, there should be an equivalent amount of clean water returned to the Santa Ana River. The San Bernardino MWD seeks a clear pathway for entities responsible for MS4 compliance to collaborate with those aiming to enhance native species habitats. As the TO stands, the **MS4 Permittees will be hindered from supporting native species' habitat** enhancement due to concerns about factors such as background bacteria that might jeopardize compliance.

To address this, the San Bernardino Valley MWD proposes compensatory reclaimed water discharges to maintain base flow in certain critical reaches. Essentially, the MWD proposes that captured water be treated and returned to the Santa Ana River to help maintain the habitats of native species. Additionally, restoring streams impacted by stormwater systems would be beneficial.

## PUBLIC EDUCATION AND OUTREACH

Permittees must implement an effective public education and outreach program designed to raise awareness of pollution-prevention of BMPs by distributing educational material and motivating the public to implement BMPs resulting in reduction of pollutants in MS4

discharges. Beacon Economics has not attempted to estimate the additional costs of public education and outreach programs that would be required to ensure compliance with the numeric limitations as set forth in the TO.[18]

# Part III. Impact on Disadvantaged and Developing Communities

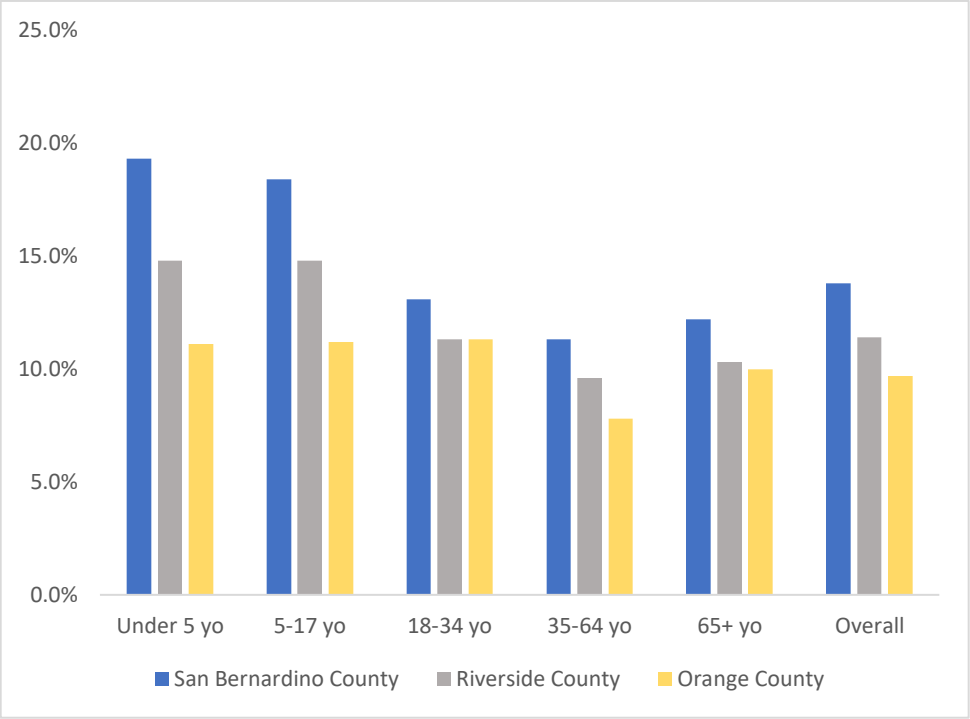
The financial impact of the TO on Permittee counties is not just a matter of compliance**. It is a question of prioritizing resources in regions already struggling with substantial socioeconomic challenges.** This reallocation could further strain efforts to uplift disadvantaged communities, creating a cycle of economic hardship that is difficult to break.

The proposed TO for stormwater management in the Santa Ana River Watershed presents challenges across the counties involved, particularly San Bernardino and Riverside. These counties, which already face substantial economic challenges, are expected to bear a disproportionate share of the financial burden compared to wealthier counties like Orange.

This section contextualizes these concerns by providing a comparative analysis of these three counties, focusing on their **demographic profiles, disadvantaged communities**, and the **financial implications for city budgets**.

[18] In addition to the costs above, this report does not include cost estimations for: constraints to water quality credit trading, additional staff training, integrated pest management, new program effectiveness, assessments, re-evaluation of the monitoring program, and TMDL programs.

**Figure 8. Poverty Rates by Age Group across Permittee Counties**




Source: U.S. Census Annual Community Survey (ACS) 5-year estimates. Analysis by Beacon Economics.

Globally, there is a well-documented disparity between those who contribute most to environmental degradation and those who suffer the consequences.[19] The financial burdens imposed by the TO—ranging from the development and maintenance of WMPs to increased industrial and commercial inspection costs—are likely to disproportionately impact the counties of San Bernardino and Riverside. These counties, which house a significant proportion of disadvantaged communities, are less equipped than Orange County to comply with the TO without facing substantial economic disruption.

## DEMOGRAPHIC AND SOCIOECONOMIC OVERVIEW

The three counties involved in the TO exhibit significant differences in their demographic compositions and socioeconomic conditions (Table 16 and Figure 9). These differences can, in turn, influence their capacity to manage the financial demands imposed by the TO.

- **SAN BERNARDINO COUNTY** San Bernardino has a total population of 2.18 million. Of the three counties under discussion, it has the **highest percentage of**

[19] Chancel, L., Bothe, P., & Voituriez, T. (2023). *Climate inequality report 2023, Fair taxes for a sustainable future in the global South* (Doctoral dissertation, World Inequality Lab (WIL)).

**residents living in disadvantaged communities** (33%),[20] with a large Hispanic population (55%) and significant economic challenges. The county's median household income is approximately $79,091—14% less than the state median—and 13.4% of the population lives below the poverty level.

  - The county ranks **29th out of 58 counties** in the state on the Distressed Community Index, indicating a comfortable level (Economic Innovation Group EIG, 2023).[21]

- **RIVERSIDE COUNTY** With a population of 2.43 million, Riverside County also has a significant Hispanic population (51%), and **15% of its residents are classified as living in disadvantaged communities**. The median household income is below the state median, at $86,748, with 11% of the population living below the poverty line.

  - According to EIG, Riverside County ranks **21st out of 58 counties** in California, indicating a comfortable level (Economic Innovation Group EIG, 2023).

- **ORANGE COUNTY** Orange County is the largest of the three counties, with a population of 3.2 million. A total of 15% of its population is classified as living in disadvantaged communities, and 10% of residents live below the poverty line. The county boasts a median household income of $106,209, which is **16% higher than the state median**. Its racial composition is more diverse, featuring a lower percentage of Hispanic residents compared to the other counties (34%), and a higher percentage of Asian residents (22%).

  - Classified by EIG as prosperous, ranking **10th out of 58 counties** in California (Economic Innovation Group EIG, 2023).

[20] DAC population percentages are based on data from CalEnviroScreen 4.0, developed by the California Office of Environmental Health Hazard Assessment (OEHHA). For more information, see the CalEnviroScreen 4.0 report: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

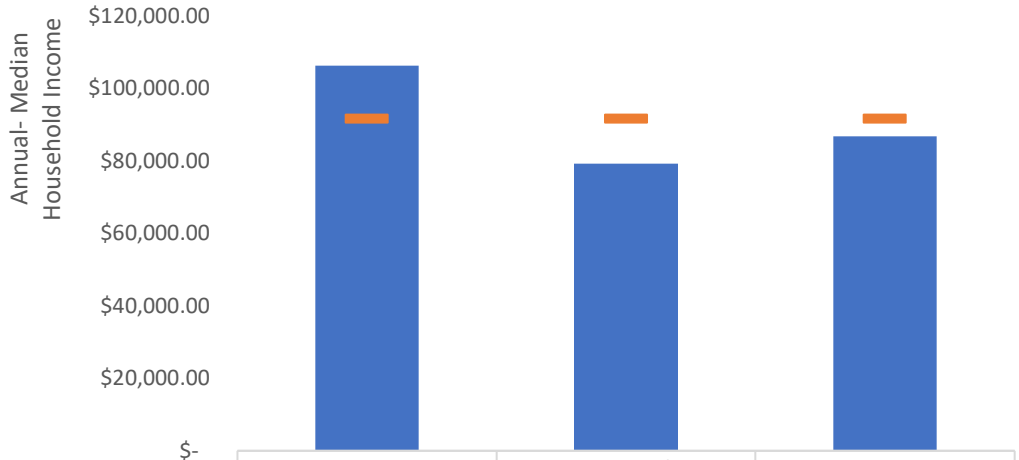
[21] To estimate the share of the population under DAC, it was considered the proximate location of each Census Tract. For more information, see the Distressed Communities Index by the Economic Innovation Group: https://eig.org/distressed-communities/?regions%5B0%5D=06065&regions%5B1%5D=06025&geo=counties&lat=33.35&lon=-116.06&z=8.01.

## Table 16. Demographic and Socioeconomic Characteristics Across Counties, 2022

| | Population | Hispanic | Black or African American | Asian | Percent below poverty level | Total Population in DAC % |
|---|---|---|---|---|---|---|
| **Orange County** | 3,175,227.00 | 34% | 2% | 22% | 10% | 15% |
| **San Bernardino County** | 2,180,563.00 | 55% | 7% | 8% | 13% | 33% |
| **Riverside County** | 2,429,487.00 | 51% | 6% | 7% | 11% | 15% |

Source: U.S. Census Bureau, American Community Survey 2022.

## Figure 9. Annual Median Household Income by County, 2022




| | Orange County | San Bernardino County | Riverside County |
|---|---|---|---|
| Median Household Income | $106,209.00 | $79,091.00 | $86,748.00 |
| California Median Household Income | $91,551.00 | $91,551.00 | $91,551.00 |
| Median Household Income Index(California = 100) | 116% | 86% | 95% |

Source: U.S. Census Bureau, American Community Survey 2022. Analysis by Beacon Economics.

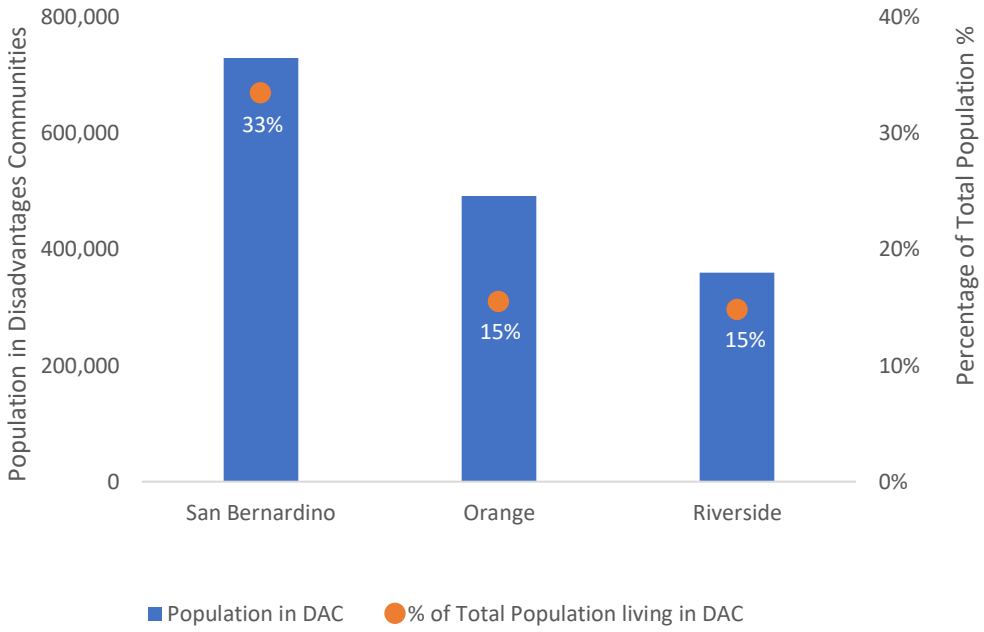
## DISADVANTAGED COMMUNITIES

To effectively classify disadvantaged communities, the **CalEnviroScreen score**[22] incorporates a broad spectrum of environmental, health, and socioeconomic data to generate scores for every census tract in California. This rigorous method identifies areas where residents are most burdened by pollution and social vulnerability.

San Bernardino County stands out for having a significantly higher percentage of its population living in DACs, as compared to Orange County. Figure 10 illustrates this contrast: 33% of San Bernardino's population resides in DACs, compared with 15% in Riverside and Orange Counties.

This demographic reality positions San Bernardino and Riverside counties in a more precarious situation. **The counties' budgets, which might otherwise be directed towards fostering economic growth and improving living conditions in these vulnerable areas, will need to be reallocated to meet the TO's stringent requirements.**

**Figure 10. Population in Disadvantaged Communities by County**




Source: U.S. Census Bureau, American Community Survey 2022; *CalEnviroScreen 4.0: California Communities Environmental Health Screening Tool*. Analysis by Beacon Economics.

[22] CalEnviroScreen 4.0 score is developed by the California Office of Environmental Health Hazard Assessment (OEHHA). For more information, see the CalEnviroScreen 4.0 report: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

The demographic and socioeconomic landscape of these counties is diverse and complex. Within San Bernardino, Riverside, and Orange counties, the population distribution differs widely in terms of racial composition, income levels, and residents in distressed communities. These factors play a crucial role in shaping how each city within these counties will experience the impacts of the TO.

To fully understand the extent of these impacts, it is essential to delve into the agency-level analysis, where the nuances of each community's economic and social structure become clear. The following sections will explore how these differences influence the capacity of individual cities to absorb the financial burdens imposed by the TO, highlighting the unique challenges faced by the most vulnerable populations in each region.

**San Bernardino County is in the least favorable position** among the three counties impacted by the TO for stormwater management. The cities within the county that shoulder the largest share of TO costs—such as San Bernardino, Fontana, and Ontario—not only face significant financial burdens but are also characterized by high levels of poverty and large populations living in DACs (Table 17).

## CITIES BEARING THE HIGHEST COSTS

- **San Bernardino (11%)**: As the largest city in the county, San Bernardino bears the highest share of TO costs. This city also faces notable socioeconomic challenges, with 18% of its population living below the poverty line, well above the state average of 12.20%. Additionally, **67% of its population is classified as living in DACs**, reflecting the significant economic and infrastructural pressures on the city and its population. San Bernardino and Rialto have a notably larger share of Black or African American residents (12%) compared to other cities in the county.

- **Fontana (10%)**: Fontana follows closely, contributing 10% to TO costs. The city has a predominantly Hispanic population (73%) and **60% of its population is considered DAC**. This high percentage indicates that a substantial portion of Fontana's population is economically vulnerable, despite its lower poverty rate.

- **Ontario (9%)**: This city also contributes significantly to the TO costs. Ontario, with **13% of its population below the poverty line** and **71% classified as DAC**, faces substantial challenges similar to San Bernardino and Fontana.

## POVERTY AND DISADVANTAGED COMMUNITIES

- **High Poverty Rates**: Nine agencies in the county have poverty rates above the state average of 12%. Six of these are within the Santa Ana region. These include San Bernardino (18%), Ontario (13%), Rialto (15%), Montclair (10%), Highland (16%) and Colton (15%).
    - These cities are also among those contributing substantial shares to the TO costs, indicating that economic vulnerability is widespread in areas that are also financially burdened by the TO requirements.
- **High DAC Populations**: Cities with a significant proportion of their population classified as DAC include Rialto (78%), Ontario (71%), San Bernardino (67%), Montclair (67%), Colton (60%) and Fontana (60%).

The high DAC percentages in these cities suggest that a large segment of their populations is economically and socially disadvantaged, making the financial burden of the TO particularly harsh.

The analysis of cities within San Bernardino, Riverside, and Orange counties reveals a complex and varied landscape where economic and social vulnerabilities intersect with the financial demands of the TO. Each agency faces unique challenges, from high poverty rates and large DAC populations, to racial and ethnic disparities. These factors underscore the profound impact that the TO will have on city agencies that are already struggling with significant economic hardships.

**The requirements of the TO will not only place additional pressure on city fiscal budgets but will also affect household incomes and local industries. As cities work to comply with the TO, the financial burden may result in reduced public services, increased taxes, or other measures that could further strain the local economy.**

## Table 17. Distribution of Tentative Order Costs and Socioeconomic Demographics across San Bernardino County Agencies

| | Share of County TO Costs | Population | Hispanic | Black or African American | Asian | % Below Poverty Level | % Population in DAC |
|---|---|---|---|---|---|---|---|
| Big Bear Lake | 1.6% | 5,059 | 30% | 0% | 3% | 14% | |
| Chino | 5.0% | 91,008 | 54% | 6% | 18% | 12% | 18% |
| Chino Hills | 5.2% | 78,223 | 29% | 4% | 40% | 8% | |
| **Colton** | **3.5%** | **53,959** | **73%** | **9%** | **2%** | **15%** | **60%** |
| Fontana | **10%** | 209,279 | 69% | 8% | 7% | 9% | 27% |
| Grand Terrace | 1.7% | 13,104 | 51% | 4% | 4% | 7% | 28% |
| Highland | 3.6% | 56,789 | 59% | 7% | 8% | 16% | 40% |
| Loma Linda | 2.3% | 24,883 | 28% | 6% | 25% | 13% | 20% |
| **Montclair** | **2.5%** | **37,842** | **71%** | **5%** | **10%** | **15%** | **67%** |
| **Ontario** | **9%** | **176,326** | **70%** | **5%** | **7%** | **13%** | **71%** |
| Rancho Cucamonga | **8%** | 174,696 | 40% | 9% | 14% | 7% | 7% |
| Redlands | 5.1% | 73,234 | 38% | 5% | 8% | 16% | 15% |
| **Rialto** | **5.3%** | **103,873** | **75%** | **12%** | **2%** | **15%** | **78%** |
| **San Bernardino** | **11%** | **221,041** | **67%** | **12%** | **4%** | **18%** | **67%** |
| Upland | 4.2% | 78,847 | 44% | 6% | 10% | 12% | 36% |
| Yucaipa | 4.2% | 54,428 | 34% | 1% | 4% | 9% | |
| | | | | | | | |
| **San Bernardino County** | **13.5%** | **2,180,563** | **55%** | **7%** | **8%** | **13%** | **33%** |
| Riverside County | | 2,429,487 | 51% | 6% | 7% | 11% | 15% |
| Orange County | | 3,175,227 | 34% | 2% | 22% | 10% | 15% |

Source: U.S. Census Bureau, American Community Survey 2022. Analysis by Beacon Economics.

## Table 18. Distribution of Tentative Order Costs and Socioeconomic Demographics across San Bernardino County Agencies

| | Median Household Income | Median Household Income (California = 100) |
|---|---|---|
| Big Bear Lake | $ 70,020 | 76% |
| Chino | $ 95,721 | 105% |
| Chino Hills | $ 105,978 | 116% |
| **Colton** | **$ 66,725** | **73%** |
| Fontana | $ 93,581 | 102% |
| Grand Terrace | $ 89,781 | 98% |
| Highland | $ 72,222 | 79% |
| Loma Linda | $ 70,685 | 77% |
| **Montclair** | **$ 72,789** | **80%** |
| **Ontario** | **$ 79,129** | **86%** |
| Rancho Cucamonga | $ 108,345 | 118% |
| Redlands | $ 92,787 | 101% |
| **Rialto** | **$ 85,585** | **93%** |
| **San Bernardino** | **$ 62,801** | **69%** |
| Upland | $ 97,838 | 107% |
| Yucaipa | $ 85,075 | 93% |
| **San Bernardino County** | **$ 79,091** | **86%** |
| Riverside County | $ 86,748 | 95% |
| Orange County | $ 106,209 | 116% |

Source: U.S. Census Bureau, American Community Survey 2022. Analysis by Beacon Economics.

The next section will explore the financial implications of the TO on each city's general fund budget, analyzing how much each city and agency is expected to pay and what these costs represent as a percentage of their general fund budget. This analysis will provide a clearer understanding of the economic pressures facing these communities and the potential ripple effects on both municipal operations and the local economy. By understanding the full scope of these financial demands, we can better assess the sustainability of these requirements and their long-term impacts on the fiscal health of the affected cities.[23]

[23] For this analysis, the General Fund Budget is primarily considered. The funding sources for individual permittees in San Bernardino County include a mix of **General Funds**, which most agencies heavily rely on, alongside **Specialized Funds** (such as Sanitation, Sewer, and Storm Drain Funds), **Inspection and Permit Fees**, **Development Fees**, and **Special Assessments** (like Stormwater Management Fees and Business License Renewal Fees). Some agencies also rely on **Property Taxes, Rents, Royalties**, and other specific fees like Water Quality Management Plan (WQMP) Check Fees. This diversity reflects the varied financial strategies employed by each city or district to support their stormwater management and related environmental programs.

# Part III. Implicit Costs

As the demographic analysis points out, the cities most impacted by the TO are those already facing socioeconomic challenges. The financial demands of the TO will exacerbate existing fiscal pressures on city budgets and will also ripple through local economies. Compliance with the TO could force cities to make difficult choices, such as reducing public services, increasing taxes, or diverting funds from critical economic development initiatives. These measures, while necessary for compliance, risk deepening the economic strain on the most vulnerable populations, potentially leading to a cycle of hardship that further undermines long-term growth and stability.

## CAPITAL COSTS RELATIVE TO GENERAL FUNDS

The capital costs required to comply with the TO present a challenge for several cities within San Bernardino County, especially when these costs are considered relative to each city's general fund budgets (Table 20).

- Several agencies would face **great financial strain**, with capital costs vastly exceeding their general funds. Grand Terrace and Highland are under immense pressure, with their capital costs exceeding **1,100%** of each of their general funds—equivalent to nearly **eleven years' worth** of each city's entire budget.

- Other agencies, including Colton, San Bernardino, and Montclair, are similarly burdened, with capital costs ranging above 350% of their general funds. These cities, which are already facing economic hardship, such as DAC populations and **high poverty rates**, may find it difficult to absorb these costs without compromising their ability to fund **essential services** and infrastructure projects.

- With **capital costs alone consuming multiple years' worth of general funds**, these cities may have to divert funds from other critical areas, potentially **exacerbating existing socioeconomic disparities**.

## O&M COSTS RELATIVE TO GENERAL FUNDS

The ongoing O&M costs present another layer of financial strain on cities within San Bernardino County. These costs are particularly concerning as they represent a significant portion of each city's general funds, leaving little room for other essential expenditures.

- **Ongoing O&M costs** under the TO represent a significant financial burden, especially for cities like **Yucaipa and Highland**, where these costs account for **20% of the city's general funds**. This percentage indicates that the agencies may struggle to maintain other essential services.

- Grand Terrace faces even more substantial O&M costs, **consuming about 28% of its general funds**. These considerable expenses could force the city to reallocate funds from other critical areas, further straining an already tight budget and potentially compromising essential services.

## OPPORTUNITY COSTS

The financial demands of the TO extend beyond direct costs; they also represent significant opportunity costs for the affected cities. Funds that could have been allocated to critical public works projects, economic development initiatives, or community services will instead be directed towards meeting the TO's requirements.

We estimate the burden of capital costs and O&M for WMP development:

- **Public Works**: Public works expenditures are crucial for maintaining infrastructure, ensuring public safety, and fostering community growth in many cities. In the City of San Bernardino, where capital costs exceed 350% of the annual budget, the O&M costs for just one year represent **34% of the general fund budget allocated to public works.** Similarly, in Colton, the O&M costs for one year are equivalent to **89% of the total annual public works budget**.[24]

    - These high opportunity costs suggest that cities may be forced to delay or cancel essential public works projects, compromising infrastructure

[24] Source: Colton Financial Report. General Fund Expenditures Budget, FY 2024-25.

maintenance and public safety. Other agencies will likely face similar challenges, requiring a reassessment of budget priorities and potentially diverting funds from critical infrastructure improvements to cover TO-related expenses.

- **Economic Development**: The diversion of funds to cover TO compliance may also impact cities' ability to invest in economic development. In Montclair, for example, the need for funds to cover yearly O&M costs could be significant, with the required amount being equivalent to over 8% of the city's general funds. This potential strain on the city's budget could limit its ability to attract new businesses, improve local infrastructure, and support job creation initiatives, especially considering that 67% of the population lives in distressed communities and 15% lives in poverty. This could have long-term consequences for the city's economic health and its ability to improve living standards for its residents.

**Table 19. Proposed Capital and O&M Expenditures Relative to 2024 San Bernardino City General Fund Expenditures**

| | | Share ($, M) | $ 792 | $ 14 | $ 173 |
|---|---|---|---|---|---|
| TO Median Cost | GF Expenditures Budget ($, M) | 2024 - 25 Budget | Capital | O&M - 1 year | Capital/5 + 1-Yr O&M |
| Police | $105.7 M | 47.7% | 750% | 13% | 156% |
| Public Works | $41.4 M | 18.7% | 1912% | 34% | 392% |
| General Government | $21.6 M | 9.8% | 3667% | 66% | 732% |
| Community Development & Housing | $14.5 M | 6.6% | 5457% | 98% | 1089% |
| Capital Improvement Projects | $0.0 M | 0.0% | | | |
| Finance & Management Services | $7.2 M | 3.3% | 10924% | 196% | 2144% |
| Parks Recreation & Community | $6.4 M | 2.9% | 12400% | 222% | 2588% |
| Legal Services | $5.2 M | 2.3% | 15280% | 274% | 3117% |
| Library | $5.8 M | 2.6% | 13710% | 246% | 3118% |
| City Manager | $5.3 M | 2.4% | 15068% | 270% | 3009% |
| Human Resource & Risk Management | $2.8 M | 1.3% | 28052% | 503% | 5569% |
| City Clerk | $2.1 M | 0.9% | 38513% | 691% | 9151% |
| City Council | $1.2 M | 0.6% | 64249% | 1152% | 13475% |
| Economic Development | $1.8 M | 0.8% | 43677% | 783% | 8497% |
| Mayor | $0.3 M | 0.2% | 236757% | 4246% | 49154% |
| Total | $221.3 M | 100% | 358% | 6% | 74% |

Source: San Bernardino City 2024 Budget. Analysis by Beacon Economics.

To illustrate the tradeoffs that need to be considered by agencies, we consider the example of the City of San Bernardino. For every $1 that is spent on compliance with the new MS4 regulations, San Bernardino **either must increase taxes by a dollar, give up spending on other public services by a dollar, or choose a combination of higher taxes and less spending on other public projects**.

Based on the city's cost share of 10.53%, the new permitting requirements correspond to capital and one-year O&M costs (for WMP development and management) of $173 million per year.[25] The table below illustrates the relative size of the city's annual cost obligation for WMP development and management, based on their 2024 general fund expenditures.[26]

**Table 20. Distribution of Tentative Order Costs for San Bernardino County, Sorted by Largest Impact Relative to Agency General Fund Budget**

| | Cost Share % | Capital ($M) | 1-Yr O&M ($M) | 20-Yr O&M ($M) | General Fund ($M) | Share of General Fund Budget | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Capital | 1-Yr O&M | Capital/5 + 1-Yr O&M |
| **Estimated Median Cost (WMP)** | | **$7,522** | **$135** | **$2,698** | | | | |
| Grand Terrace | 1.66% | $125 | $2 | $45 | $7.86 | 1588.5% | 28.5% | 346.2% |
| Highland | 3.63% | $273 | $5 | $98 | $23.85 | 1144.9% | 20.5% | 249.5% |
| Yucaipa | 4.19% | $315 | $6 | $113 | $28.81 | 1093.9% | 19.6% | 238.4% |
| Chino Hills | 5.23% | $393 | $7 | $141 | $55.27 | 711.8% | 12.8% | 155.1% |
| Loma Linda | 2.31% | $174 | $3 | $62 | $26.71 | 650.4% | 11.7% | 141.7% |
| Rancho Cucamonga | 8.37% | $630 | $11 | $226 | $117.83 | 534.3% | 9.6% | 116.4% |
| County of San Bernardino | 13.51% | $1,016 | $18 | $364 | $193.00 | 526.5% | 9.4% | 114.7% |
| Upland | 4.15% | $312 | $6 | $112 | $61.30 | 509.2% | 9.1% | 111.0% |
| Big Bear Lake | 1.63% | $123 | $2 | $44 | $24.26 | 505.5% | 9.1% | 110.2% |
| Fontana | 9.51% | $715 | $13 | $257 | $149.08 | 479.8% | 8.6% | 104.6% |
| Montclair | 2.45% | $184 | $3 | $66 | $39.36 | 468.2% | 8.4% | 102.0% |
| Colton | 3.45% | $259 | $5 | $93 | $65.94 | 393.5% | 7.1% | 85.8% |
| San Bernardino | 10.53% | $792 | $14 | $284 | $224.81 | 352.3% | 6.3% | 76.8% |
| Chino | 4.95% | $372 | $7 | $134 | $112.30 | 331.5% | 5.9% | 72.3% |
| Redlands | 5.10% | $384 | $7 | $138 | $115.73 | 331.5% | 5.9% | 72.2% |
| Rialto | 5.34% | $402 | $7 | $144 | $129.29 | 310.7% | 5.6% | 67.7% |
| Ontario | 9.00% | $677 | $12 | $243 | $428.87 | 157.8% | 2.8% | 34.4% |
| SB County Flood | 5.00% | $376 | $7 | $135 | - | - | - | |
| **Average** | **6%** | **$418** | **$7** | **$150** | **$106.13** | **594%** | **11%** | **129%** |
| **Median** | **5%** | **$374** | **$7** | **$134** | **$65.94** | **505%** | **9%** | **110%** |

[1]Note: General Funds: Total General Fund Budgets for the last year available (2023 or 2024). For Grand Terrace, last year available is 2021; Ratio: Capital: Estimated Capital Cost / General Fund Budget; Ratio: 1-Yr O&M: One year estimated O&M costs / General Fund Budget. Source: San Bernardino FY 2024 - 2025 budget and cost-sharing allocation; City Financial Reports. Analysis by Beacon Economics.

[25] Assuming capital costs for WMP development are spread out over 5 years.

[26] City of San Bernardino's general fund is used here to illustrate the relative size of TO-induced spending.

The significant budget required to comply with the TO highlights the need for San Bernardino County to explore alternative funding sources beyond the general fund. While **Measure W**[27] in Los Angeles County serves as an effective model of dedicated funding for water quality and infrastructure projects, these counties must consider pursuing similar initiatives or securing additional state and federal grants tailored to their specific needs to bridge the substantial funding gap.

However, it is relevant that any new funding mechanisms are designed to avoid imposing an undue burden on already economically vulnerable communities. As discussed throughout this analysis, many cities within these counties are already facing challenges. Implementing regressive funding strategies could exacerbate these challenges, particularly in areas with high DAC populations and existing socioeconomic disparities.

[27] Measure W collects funds through a property tax of 2.5 cents per square foot of impermeable surface area, such as driveways and rooftops, on properties in Los Angeles County. This tax is specifically designed to address stormwater runoff, with the revenue allocated to projects that enhance water quality, increase water supply, and support environmental sustainability across the county.
For more detailed information, you can visit Measure W: The Safe, Clean Water Program.

# Conclusion

The proposed TO carries significant costs—both explicit and implicit—on the 17 agencies in San Bernardino County (excluding the Flood Control District). These costs stem from three key factors: (1) a proposed overhaul of the existing BMP approach to stormwater management in favor of an approach based on numeric limitations, (2) an increase in industrial and commercial inspections, and (3) changes in development and significant redevelopment requirements that will now more easily, and often unreasonably, trigger a WQMP.

Beacon Economics estimates the annual costs for the county will be over half a billion dollars, which equates to nearly $10.8 billion over the next 20 years. Spending of this size will be cost-prohibitive for agencies, which is directly against the expectations outlined in the California State Auditor's Report on State and Regional Water Boards:[28]

> "We would expect that in developing pollutant control plans, regional boards would adequately consider the costs local jurisdictions would incur to comply with the pollutant control plans and would determine the overall cost of storm water management to those jurisdictions so as to make sure that such costs are not prohibitive."

Based on Beacon Economics' analysis, these increased costs will disproportionately impact San Bernardino County's disadvantaged communities, forcing them to choose between important public programs—police, fire service, public works, economic development—and complying with the new requirements.

As Los Angeles has had to do through Measure W, San Bernardino County will likely need to implement a new tax based on the square footage of property, which being a somewhat regressive tax will continue to pose disproportionately high financial burdens on the most disadvantaged communities.

[28] https://information.auditor.ca.gov/pdfs/reports/2017-118.pdf

# About Beacon Economics

Founded in 2006, Beacon Economics, an LLC and certified Small Business Enterprise with the state of California, is an independent research and consulting firm dedicated to delivering accurate, insightful, and objectively based economic analysis. Employing unique proprietary models, vast databases, and sophisticated data processing, the company's specialized practice areas include sustainable growth and development, real estate market analysis, economic forecasting, industry analysis, economic policy analysis, and economic impact studies. Beacon Economics equips its clients with the data and analysis they need to understand the significance of on-the-ground realities and to make informed business and policy decisions.

**Learn more at beaconecon.com**

## Project Team

**Christopher Thornberg PhD**. Founding Partner (Project Advisor)

**Niree Kodaverdian PhD**. Research Manager

**Miriam Valdes PhD**. Research Manager

## For further information about this report or to learn more about Beacon Economics please contact:

**Sherif Hanna**, Managing Partner sherif@beaconecon.com

**Victoria Bond**, Director of Marketing and Communications. victoria@beaconecon.com