



Tuolumne County Transit Program Report

Transit in Transition

June 30, 2020



Tuolumne County Transit Bus.

Photo: TCTC Transit Wiki



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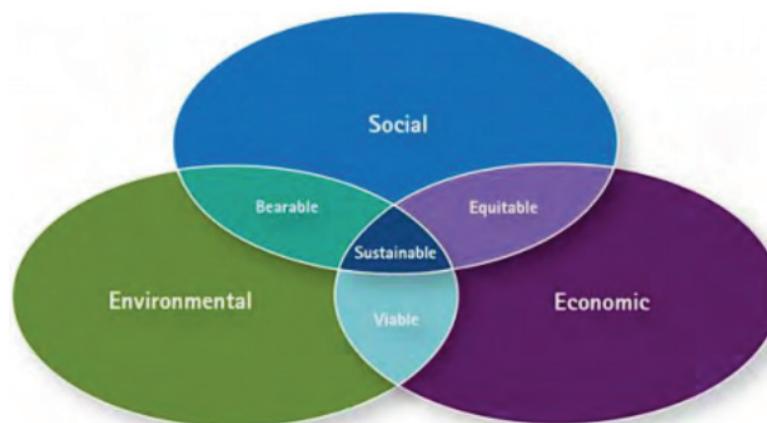
Transit in Transition

Summary

The purpose of this investigation is to determine if the Tuolumne County Transit Agency (TCTA) is achieving performance expectations related to ridership and state-mandated reduction of Greenhouse Gas (GHG) emissions. The primary concern presented to the grand jury was that the Agency is operating with low ridership, as observed by the complainant. The Agency operates with a fleet of 22 medium to large diesel-fueled buses which emit high quantities of greenhouse gases. The combination of low ridership and highly polluting buses is the basis of the complaint.

The TCTA provides transportation to the County's transit-dependent community and is mandated to transition to zero-emission vehicles (ZEV) by 2030. Addressing a reduction in GHG is part of the overall sustainable transportation strategy for Tuolumne County. The Agency's focus is on economic, environmental, and social indicators to achieve a well-balanced regional transportation system.

The Three Principles of Sustainability - Figure 1.0



Source: 2016 Final Regional Transportation Plan; Chapter Four

This report documents the efficiency of the transit program and how the Agency is positioned to reduce greenhouse gases to zero emissions. Findings and recommendations regarding improvement of Tuolumne County Transit (TCT) operations are provided to enhance the existing program with the goal of reducing greenhouse gases to mandated levels.

Glossary

ADA	American with Disabilities Act: Federal legislation ensuring accommodations of disabled persons by all public services, facilities, and entities
APTA	American Public Transportation Association: A nonprofit group of public and private sector organizations, that promotes and advocates for the interests of the public transportation industry in the United States
CARB	California Air Resources Board: Responsible for the State's air quality and emission enforcement
DAR	Dial-A-Ride: on-demand bus service provided by TCTA, serving customers unable to utilize fixed-route bus lines
Fixed-Route	Bus lines with established routes and timetable scheduling
Fleet	Groups of motor vehicles typically owned and operated by governmental entities
FTA	Federal Transit Administration: Provides financial and technical assistance to local public transit systems
GHG	Greenhouse gases: CO ₂ , Methane, and other gases that contribute to climate change and global warming
JPA	Joint Powers Authority: A legal entity whereby two or more public entities (e.g. local governments, or utility or transport districts) may jointly exercise any power common to them all. In this report, the two authorities are the City of Sonora and the County of Tuolumne
On-demand	A "call-for-service" curb-to-curb service, utilized by cab companies, rideshare services like Uber and Lyft, and some public bus agencies
RTP	Regional Transportation Plan
TCTA	The Tuolumne County Transit Agency: The governing authority of the transit program, operating under the TCTC
TCTC	The Tuolumne County Transportation Council: The county transportation department overseeing TCTA
TDA	Transportation Development Act: State legislation to improve public transportation services and encourage regional transportation coordination
VMT	Vehicle Miles Travelled: Quantitative performance measurement to evaluate cost effectiveness, and air quality measures in GHG emissions
ZEV	Zero Emissions Vehicle: An electric or hybrid vehicle that emits no exhaust gas from the onboard source of power

Methodology

To research this report, the 2019-2020 Grand Jury interviewed several officials with the County, as well as local pollution control district personnel.

In addition, the Grand Jury also reviewed the documents listed in the bibliography.

Background

History and Governance of the Tuolumne County Transit

The transit operation was transferred from Tuolumne County to the Tuolumne County Transportation Council (TCTC) in 2010 via the Joint Powers Authority (JPA) between Tuolumne County and the City of Sonora. The TCTC became the Regional Transportation Planning Agency tasked with planning for local transportation needs and incorporating rural area needs into the state transportation planning process. Caltrans in 2011, recommended the formation of the Tuolumne County Transit Agency (TCTA) to operate the transit system. The TCTC, as overseer of the TCTA, shares the same staff of five and Board.

A private transportation company, Storer Transit Systems, is contracted to provide the drivers, dispatchers, mechanics, and support staff for the operation and management of the Tuolumne County Transit. Ridership largely consists of transit-dependent groups including the elderly, disabled, low-income, veterans, students, and residents who either do not own a car or are unable to drive.

Discussion

The transit system provides five fixed routes as well as limited on-demand services (Dial-a-Ride) to the transit-dependent communities of Sonora, Columbia, Jamestown, Tuolumne, Twain Harte, Mi-Wuk Village, Sierra Village, Groveland and the Mi-Wuk Rancheria. The Columbia route includes connections to Calaveras County Transit, which links to other regional transit systems. The transit currently operates from 6:00 AM to 7:00 PM on weekdays along the fixed routes with designated stops. Up to ten of the fleet make an average of 300 total trips per day. A minimal fee (\$2 for adults, \$1.50 for students and free for seniors and children under 12) is collected.

Seasonal buses transport recreationists to Dodge Ridge Ski Area and Pinecrest. Most recently, transportation to Yosemite National Park has been added, via the Yosemite Area Regional Transportation System (YARTS). Both seasonal transit and fixed routes with county-to-county connections comply with the program goals of section 5311, FTA (2014), which require rural transit systems to: “enhance access to health care, shopping, education, employment, public services, and recreation.”

On Demand Services

For ADA passengers unable to use the transit system, other options are available. Dial-A-Ride services (DAR) offer origin-to-destination service, and are available seven days a week, with

limited availability for the public on Saturdays. The Trip Program was established in 2014 to accommodate transit disadvantaged clients of Groveland. The program is intended to be a 'safety net' service for those not otherwise served by existing transportation and is now available throughout the County. Currently, clients find their own drivers who are reimbursed at the IRS rate of 58 cents per mile. According to TCTA, this is very cost-effective, however is not widely used or advertised because of a limited yearly budget of \$10,000.

Unmet Transit Needs Process

The Transportation Development Act (TDA) requires the Unmet Transit Needs Process be conducted annually by the TCTC. The purpose is to determine whether there are "unmet transit needs that are reasonable to meet" to improve transit/paratransit services. The Council conducts public informational meetings however attendance is low. The TCTC recognizes that public awareness and social service referrals are areas in need of improvement and has applied for a grant to fund a mobility manager who will be responsible for addressing these concerns.

Advertising

The TCTA advertises through its website, social media, public meetings, outreach and community events and direct outreach to Adventist Health, the County Superintendent of Schools, and the Commission on Aging. Schedules, system maps and flyers are available at bus stops. Radio and TV/streaming commercials are other sources of advertising. The Trip Program advertises through brochures, coordination with social service providers, community action groups and transportation providers. Currently, the source of Trip Program users is from referrals from social service providers.

A rider survey conducted by the TCTA in 2019 showed that among the 137 transit riders polled, only four percent had heard about the transit service via advertising. Further, 49 percent had gained knowledge of the transit by simply seeing a bus, the rest of the responses being split between social services, friends and family, bus route map, and 'other'. As to finding route and scheduling information, the majority (69 riders, or 34 percent) did so from either the TCTA website or a pamphlet found on the bus itself. In addition, some members of the Grand Jury attempted to obtain bus schedule information on the TCTA website and social media. These efforts were found to be laborious and the tools were not very user friendly.

Challenges of the TCTA as a Rural Transit Provider

Transportation issues of rural transit operators are significantly different from those in urban regions (Rural Fact Transit Book 2017). Rural transit operators struggle to achieve high-performance measures because:

- ▶ Stakeholders are a small population, unlike urban areas with growing populations,
- ▶ Stakeholders live in remote areas causing vehicles to travel greater distances,
- ▶ Factors such as challenging terrain, poor pavement, inclement weather, frequent stopping, a high percentage of mobility-impaired riders, all combine to yield poor gas mileage, high maintenance costs, and a less regular schedule.

The inequities of evaluating performance measures of rural transit agencies are further exacerbated by current state and federal data collection practices, which require all transit agencies to collect data on passengers per vehicle service hour and passengers per mile. These practices make sense for urban counties because dense populations create high ridership, resulting in high passenger related data. High ridership equates to high productivity which bodes well for urban systems.

State Mandated Data for Performance Measurement

The 2017 TCTA’s Triennial Performance Audit was conducted by an independent contractor and pertinent information from the audit is presented in Table 1.0. Staff also evaluates the monthly performance of the transit, including Storer Transit, on its ability to meet the transit needs of the community. The TCTA is preparing for the 2020 audit and welcomes the forthcoming recommendations to improve efficiency.

State Mandated Performance Data -Table 1.0

Generalized Services	FY 14	FY 15	FY 16	FY17
Passengers per Vehicle Service Hour (VSH)	6.3	6.7	6.3	5.9
Passengers per Vehicle Service Mile (VSM)	0.4	0.4	0.4	0.4
Operating Cost per Trip	\$13.72	\$13.22	\$14.32	\$15.55
Operating Cost per Vehicle Service Hour (VSH)	\$86.27	\$87.94	\$85.40	\$92.51
Farebox Recovery Ratio	10.3%	10.1%	8.9%	9.5%
On Time Performance	85.3%	92.2%	92.3%	94.1%

Source: TCT Annual Performance Report 2016/2017

In contrast to urban systems, the TCTA averages 6 passengers per vehicle service hour and 0.4 passengers per vehicle service mile. These low numbers equate to empty or nearly empty buses that challenge the sustainability of the transit system and are the source of the complaint that generated this report. While data on passenger numbers are easy to collect, they are generally low in rural areas and tell very little about how well the TCTA is performing with regards to meeting the community’s social and economic needs (see Fig 1.0). It is recommended, in the 2017 Development of Performance Measures for Rural Counties in California, that rural transit agencies collect data on operating cost per mile, as an overall measure of transit service efficiency because these data reflect both fixed and variable costs. However, operating cost per mile was not included in the 2017 audit.

In addition, how well the transit meets the needs of the elderly, the disabled, and transit-dependent is not currently part of the performance evaluation. According to the recent Passenger Analysis conducted by the TCTA, 62% of transit users are elderly or handicapped, and 68% list the transit system as their only means of transportation, making their satisfaction of utmost importance to the TCTA.

While ridership and farebox recovery data show decreasing trends, a significant gain in college students using Fixed Routes 1, 3, and 4 and an increase in monthly pass sales are observed. Students ride for free, and the TCTA is reimbursed by Columbia College. Transporting students to college has profound and long-reaching impacts on society that are not measurable, according to the Cost-Benefit Analysis of Rural Transit, U.S. Department of Transportation 2014. This qualitative type of service is generally not included in performance measures though rural transit agencies are required by the FTA to promote regional connectivity for educational purposes.

Fixed-Route Performance

Farebox recovery ratio is calculated by comparing the revenue generated with the total cost of operation. The Transit Contract requires that the farebox recovery ratio not fall below 10% for any single month to continue funding. The overall farebox recovery for the TCTA, as published in the 2017 audit, is 9.5% for 2017, slightly below the 10% needed for funding renewal. Funding has continued because the state allows advertising revenue from displayed business ads to supplement farebox revenue, thereby allowing the TCTA to meet the minimum requirement.

Farebox Recovery for Each Route - Table 2

Route/Service Area	2015	2016	2017	TDA Funding Goal 10%
# 1 Sonora Loop	15.6%	14.8%	16.4%	Exceeds goal; Route is viable
# 2 Sierra Village - Sonora	8.9%	6.9%	6.5%	Below goal; decreasing ridership
# 3 Jamestown - Sonora- Columbia	9.8%	8.4%	7.7%	Below goal; increasing ridership
# 4 Sonora- Columbia	8.0%	8.3%	7.8%	Below goal; increasing ridership
# 5 Sonora - Tuolumne	7.2%	6.7%	7.4%	Below goal; decreasing ridership

Source: TCTC audit of 2017

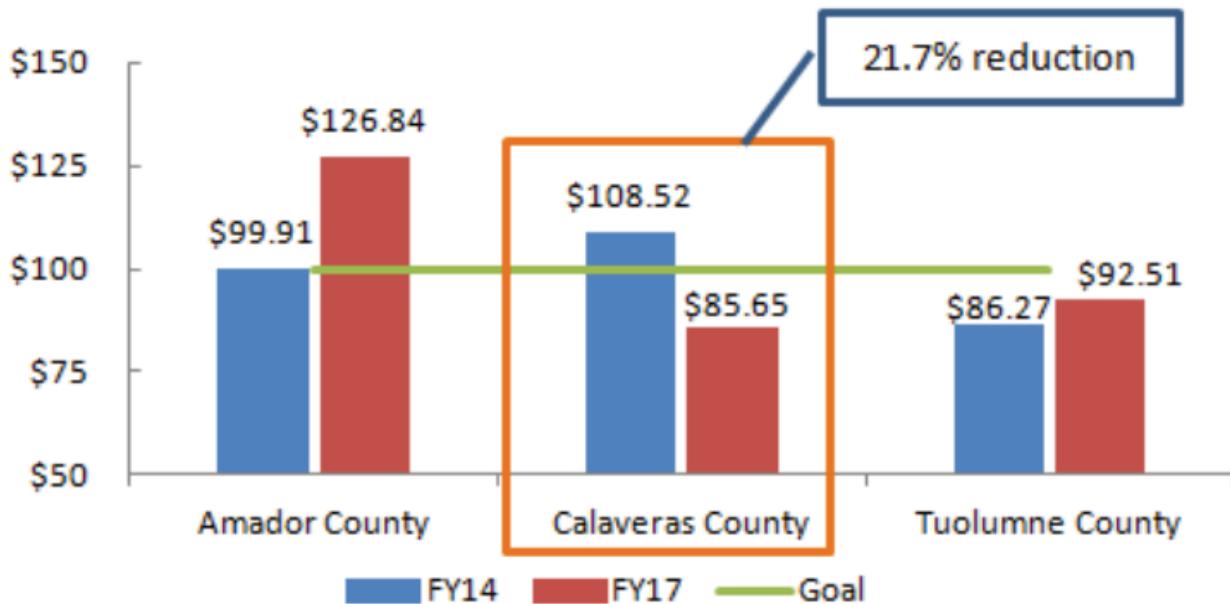
As shown in Table 2.0, Route 1 consistently remains the most viable route. Routes 2-5 fall below 10% but are within the expected range of 5-10%. Routes 3-4 show increasing ridership. It is not uncommon for rural transit agencies to have to address low ridership. In fact, the TCTA has eliminated a fixed-route due to low farebox revenue and high operating costs; Route 6 underperformed, was eliminated and converted to DAR after the audit.

As a comparison, farebox revenue in Calaveras County showed that its transit system was operating at 8.78%, below the minimum rate of 10%. According to the Calaveras Enterprise in April 2017, the transit system altered routes and schedules to accommodate frequent riders. Improvements included increased trip frequency on the popular routes; improved connections with feeder routes; reduction of low-performing routes and increased DAR services. As shown on Table 3.0, Calaveras

County successfully reduced cost per vehicle service hour. In peer county transportation plans, a target below \$100 per hour is considered reasonable and this is consistently met by the TCTA.

Operating Cost per Vehicle Service Hour (VSH)

Vehicle Service Hours: All Routes County Comparison - Table 3.0



Source: Triennial Performance Audit; Tuolumne and Calaveras County

Greenhouse Gases Emissions Reduction

There are several state laws and executive orders that require transit agencies to reduce greenhouse gases (GHG) by 80% below 1990 levels by 2050. Emission levels have hit the 2020 target, however reductions necessary to reach the 2050 target will be much greater. The main GHG targeted by these laws is carbon dioxide (CO2).

CARB Programs to Reduce Transportation Emissions

Three categories of state programs concerning the TCTA are: (1) reducing emissions from light-duty vehicles, (2) increasing the use of lower carbon fuels, and (3) reducing vehicle miles travelled. These programs provide financial incentives from the state to reduce local costs of adopting lower-emission technologies and penalize others using higher-emission technologies. The TCTA uses light duty vehicles and will be assisted in reaching GHG reduction goals by participating in the following programs:

- ▶ Clean Vehicle Rebate Project - Rebate for purchase/lease of a new zero emissions vehicle (ZEV)
- ▶ Public ZEV Infrastructure Funding - Funding to support the installation of public electric vehicle recharging and hydrogen refueling stations.

Presently, the TCTA has purchased one Chevy Bolt for a staff of five to use and recharge at their office building. In addition, a charging station has been installed at the public library for public use and others are planned for public use this year.

The TCTC/TCTA is mandated to reduce GHG emissions by adopting CARB's strategies, which center on improving vehicle and fuel efficiency, while reducing vehicle miles travelled (VMT). Reducing VMT is essential because as the population grows, any increase in VMT could counter the emissions benefits attained through technological improvements. The TCTC has adopted the Distinctive Communities Growth Strategies, as stated in the 2016 Final Regional Transportation Plan, and is committed to reducing VMT, even with growth in population through 2040.

The Agency must also comply with the CARB Innovative Clean Transit regulation which provides a target and roadmap for meeting the State's air quality targets. With a goal of transitioning to zero emissions technology by 2040, the TCTA must develop a rollout plan detailing how it plans to purchase clean buses, build infrastructure, and train the workforce. Specifically, the Agency must produce a rollout plan by June 30, 2023. Beginning January 1, 2026, 25% of new bus purchases must be ZEVs and by January 1, 2029, all new purchases must be ZEVs. The most challenging obstacles for the TCTA to transition to ZEVs are:

- ▶ The TCTA does not own the facility from which they operate, posing problems for infrastructure development to support ZEVs.
- ▶ Mid-size range ZEV buses are not commercially available currently.
- ▶ Availability and expense of a power source for a bus fleet needs further study.

TCTA Buses and Passenger Vehicles GHG Emissions

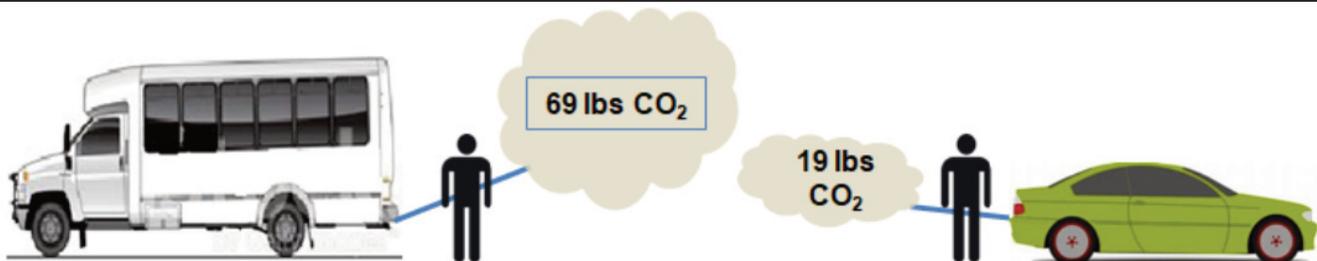
From TCTA data, farebox recovery hovers below 10 percent, passengers per hour average 6, producing a rate of 0.4 passengers per mile. The TCTA primarily uses 18-22 passenger seat vehicles on their fixed routes and DAR which use high fuel consumption and emit high levels of CO₂.

A comparison of GHG emissions from transit buses with cars or vans that could potentially be used, is as follows:

- ▶ Cars emit about 19 pounds of CO₂ per gallon of fuel and achieve about 25 mpg.
- ▶ Buses emit about 23 pounds of CO₂ per gallon of diesel and get about 8 mpg.

According to Environmental Protection Agency estimates, if one car or van carries one passenger 25 miles, the vehicle would consume 1 gallon of fuel and emit 19 pounds of CO₂. If a TCTA bus carries one person the same distance, the vehicle would consume 3 gallons of fuel and emit 69 pounds of CO₂.

In this scenario the bus pollutes 3.5 times as much as the other vehicle which is compounded with a fleet of nearly empty buses operating 300 trips daily. When ridership is low, emission output per person of buses is higher than that of smaller vehicles that would be used to carry the same number of people.



With GHG reduction goals in place and plans to purchase ZEVs due by 2023, the TCTA plans on acquiring grants and financial incentives to achieve the goals. Previous performance measures must be augmented with new ones related to GHG reductions. The challenge is what steps should be taken between now and 2023 when the ZEV transition roll-out plan is due. Further, transit agencies must comply with mandates, while continuing to meet the needs of its stakeholders dependent on the TCTA.

The Grand Jury reviewed many documents in which GHG reduction requirements are outlined, strategies for reducing GHG are established and incentives for early transitioning are provided. The TCTA stated that the Short-Range Transit Plan (not published) will also guide the implementation of GHG reduction measures.

Findings

- F1.** The Grand Jury finds that some fixed routes consistently display low and declining ridership.
- F2.** TCTA uses oversized and fuel inefficient buses to accommodate an expected, but unmaterialized, increase in ridership, and their continued use is counterproductive to state efforts to minimize GHG emissions.
- F3.** The Grand Jury finds that the criteria for performance evaluation do not reflect rural transit challenges.
- F4.** Despite advertising efforts, access to transit information is difficult for the public, and could contribute to lowered public awareness and ridership.
- F5:** TCTC cannot justify pursuing costly infrastructure development for a ZEV fleet, due to not owning their current facility.

Recommendations

- R1.** The Grand Jury recommends that the TCTA examine overall routes and schedules; remedial measures such as consolidation, expanding DAR, increasing Trip Program funding, and increasing bus frequency on popular routes should be considered (F1)
- R2.** The Grand Jury recommends, prior to the rollout of the ZEV transition plan, any vehicles purchased for replacement purposes should be smaller fuel-efficient vehicles and should be used for DAR and fixed routes with low ridership. (F2)
- R3.** The Grand Jury recommends that the TCTA self-audit performance with quantitative measures including operating costs per hour, operating costs per mile and vehicle miles travelled, as well as qualitative measures such as community benefit and passenger service. (F3)
- R4.** The Grand Jury recommends improving website usability, and revising and improving advertising strategies, public outreach venues and implementing the improvements outlined in the 2019 Passenger Analysis. (F4)

R5. The Grand Jury recommends that the TCTC pursue a permanent location to begin installing infrastructure to support transitioning to ZEVs. Further, the Council should take advantage of incentives and funding by participating in state incentive programs (F5)

Request for Response

The following responses are required, pursuant to California Penal Code §933 and §933.05, no later than 90 days after the Grand Jury submits a final report on the operations of any public agency subject to the reviewing authority, the governing body of the public agency shall comment to the presiding judge of the superior court on the findings and recommendations pertaining to matters under the control of the governing body and every elected or appointed county official or agency head for which the Grand Jury has jurisdiction shall comment within 60 days to the presiding judge of the superior court.

From the following elected or appointed county officials within 60 days:

- ▶ The Tuolumne County Transportation Council Executive Director: R1 - R5.

Bibliography

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2016 Final Regional Transportation Plan

2019 Central Sierra Fleet Analysis

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From Cars to Buses: Using OCTA Ridership to Analyze the Emission Benefits of Bus Transportation by John Naviaux 2011

Traffic Congestion and Greenhouse Gases, Barth and Boriboonsomsin UC Riverside Center for Environmental Research and Technology 2009

Calaveras Transit FY 2016-17 Mid-Year Performance Report April 11, 2017

Amador County Short Range Transit Development Plan for Years 2014 through 2019

Reinke, Damkowich and Landon 2017 Development of Performance Measures for Rural Counties in California

Tuolumne County Public Power Authority

Rural Fact Transit Book 2017

Disclaimer

This report was issued by the 2019-2020 Tuolumne County Grand Jury except for one juror who is related to an employee of Tuolumne County Transportation Council, or who has a real or perceived bias. This grand juror was excluded from all parts of the investigation, including interviews, deliberations, and the writing and approval of this report.

Reports issued by the grand jury do not identify the individuals who have been interviewed. Penal Code §929 requires that reports of the grand jury not contain the name of any person or facts leading to the identity of any person who provides information to the grand jury.