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Document Title:	Appendix L Transportation Impact Study_VPC
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Appendix L

Transportation Impact Study

Vaca Dixon Power Center
Transportation Impact Study

December 4, 2025

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Vaca Dixon Power Center
Transportation Impact Study

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1.0 Introduction

1.1 Description of the Region/Project

This Transportation Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the proposed Vaca Dixon Power Center (the Project).

Vaca Dixon BESS LLC and Arges BESS LLC (Applicants), propose to construct and operate two battery energy storage system (BESS) facilities totaling 457 megawatt (MW) hours (MWh) of capacity. The BESS facilities are located on an approximately 10-acre parcel in the City of Vacaville (the City) in Solano County. The Project would operate 7 days a week, 365 days a year, with an up to 35-year anticipated lifespan. The Project also incudes 13.8 kilovolt (kV) and 115 kV gen-tie lines that interconnect to the north on the Pacific Gas & Electric Company (PG&E) Vaca-Dixon Substation property.

Figure 1-1 shows the Project location and Figure 1-2 shows the Project site plan.

1.1.1 *Project Access*

Main access to the Vaca Dixon Power Center (for both BESS facilities) would be provided from Kilkenny Road (County Road No. 393) along the southern extent of the Project area. To the east of the project site, Kilkenny Road connects to Byrnes Road where project traffic would transfer to Weber Road to access northbound (or southbound) Interstate-80 (I-80). To the south of the project, Kilkenny Road connects to Willow Road, Walnut Road, Orange Drive, and Leisure Town Road where project traffic would access I-80 and Vaca Valley Parkway. The primary access to the gen-tie routes on the PG&E parcel to the north is via Quinn Road and the private plant access road to the CalPeak Power Vaca Dixon Peaker Plant.

1.1.2 *Study Area*

The traffic analysis study area included the following roadway segments:

- ✓ Vaca Valley Parkway, I-80 to Orange Drive
- ✓ Orange Drive, Vaca Valley Parkway to Walnut Road
- ✓ Walnut Road, Orange Drive to Willow Road
- ✓ Willow Road, Walnut Road to Kilkenny Road/Project Site
- ✓ Kilkenny Road/Project Site, Willow Road to Byrnes Road
- ✓ Byrnes Road, Kilkenny Road to Weber Road
- ✓ Weber Road, Byrnes Road to I-80

It should be noted that the traffic analysis study area did not include the area north of I-80. Although there would be some construction and operational trips in this area related to the Gen-Tie line, the number of trips for both the construction and operational scenarios would be insignificant.

1.1.3 *Study Scenarios*

The study was based on daily traffic conditions. Level of service analysis was conducted for the following scenarios:

- ✓ Existing Conditions
- ✓ Existing Plus Project Conditions
- ✓ Near-Term (Year 2029)
- ✓ Near-Term (Year 2029) With Project

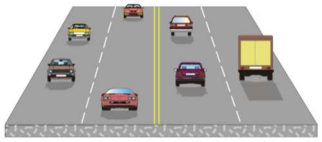
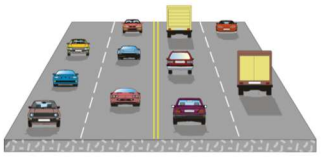
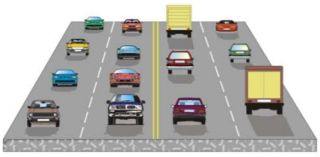
It should be noted that Project traffic is also expected to use I-80. However, because Project traffic would be insignificant in comparison to the existing traffic levels on this roadway, they are not discussed further in this report. Refer to Section 3.7 for a discussion of the gen-tie construction across I-80.

1.2 Methodology

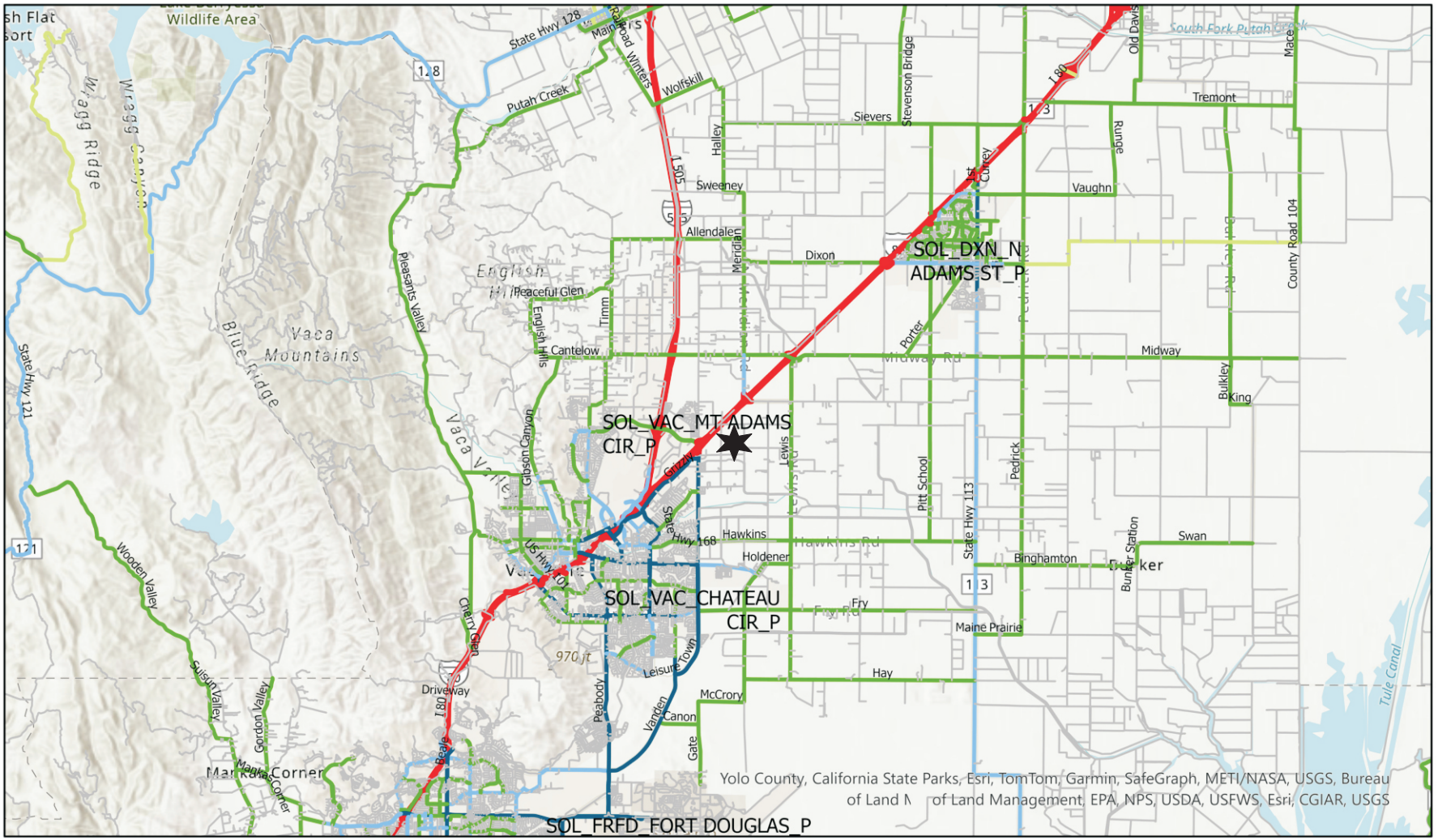
When preparing a TIS, guidelines set by affected agencies are followed. Since the affected roadways are primarily in Solano County, level of service (LOS) methodologies from the Solano County General Plan were applied. The LOS metric was applied to quantitatively assess a street and highway system's performance by rating intersections on a scale of LOS "A" through "F". Levels of service are shown graphically in Table 1-1. LOS D or better was considered to be the desired LOS for the purposes of this analysis. The trips generated by the project during operation would be minimal, so this analysis focuses on the trips generated during construction of the project.

Although traffic impacts based on level of service and delay are the subject of this report, it is important to note that vehicle miles traveled (VMT) is the performance measure used to determine the transportation impacts of a project under the California Environmental Quality Act (CEQA). See Section 3.7 for analysis of VMT.

Table 1-1
Roadway Segment Level of Service Definitions
(Highway Capacity Manual)

LEVEL OF SERVICE	DEFINITION	
A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.	
B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.	
C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.	
D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.	
E	Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.	
F	Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.	

Vaca Dixon Power Center



Legend

HWY_CRS
Functional Class

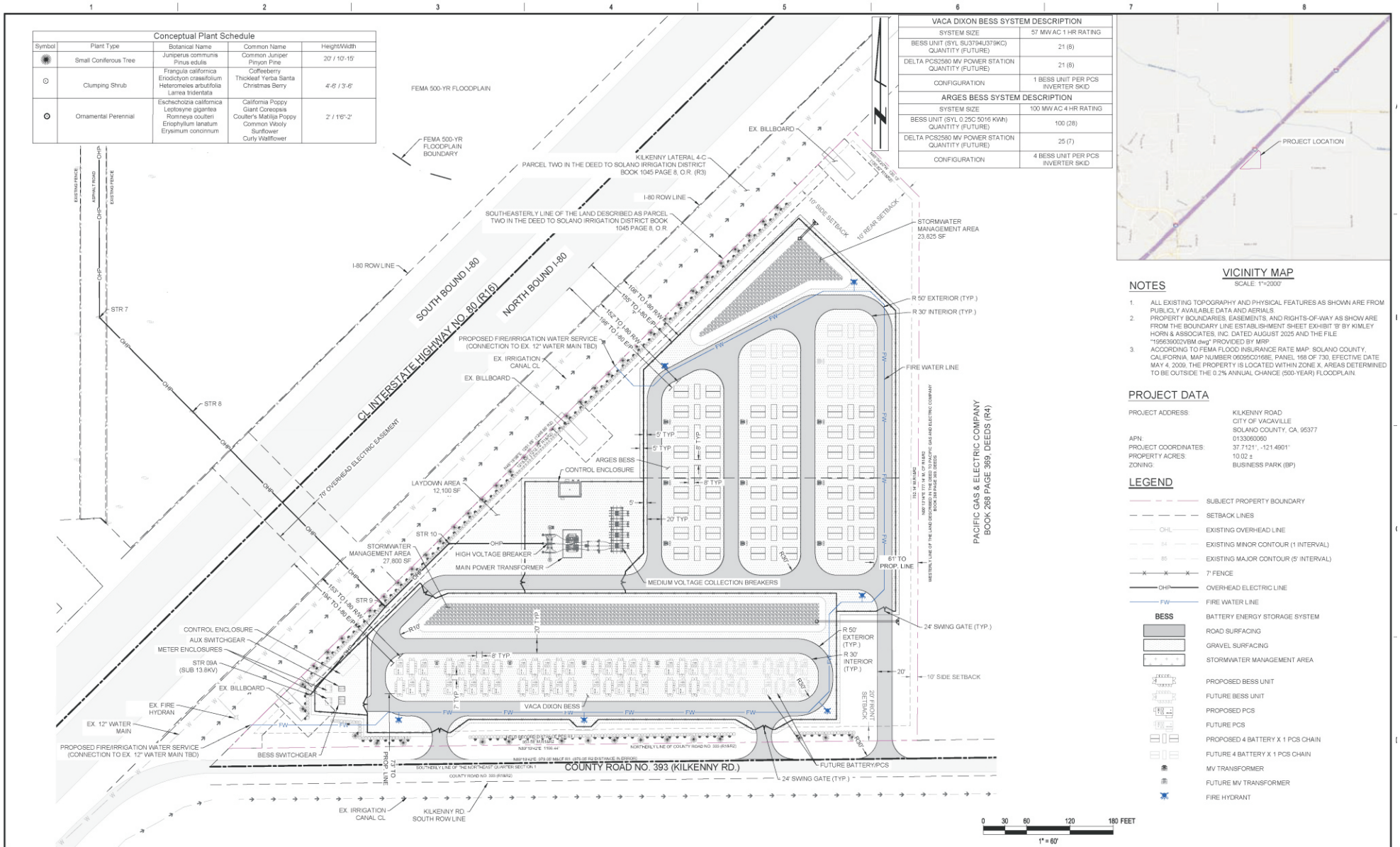
- 1 - Interstate
- Project Site
- 2 - Principal Arterial - Other Freeways and Expressways
- 3 - Principal Arterial - Other
- 4 - Minor Arterial
- 5 - Major Collector
- 6 - Minor Collector
- 7 - Local

N

1:250,000

0 1.75 3.5 7 Miles

VRPA TECHNOLOGIES, INC.



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REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
A	ISSUED FOR INFORMATION	11/24/2025	JMM	SMT	TWH	

REFERENCE DRAWINGS

DSGN	SMT	07/03/2025
DRN	JMM	07/03/2025
CKD	TWH	07/08/2025

SCALE: 1"=60'
FOR 22x34 DWG ONLY

POWER ENGINEERS

MIDDLE RIVER POWER
VACA DIXON & ARGES BESS
PRELIMINARY SITE PLAN

JOB NUMBER 0256726
REV A
DRAWING NUMBER SP-100

SP-100.DWG

2.0 Existing Conditions

2.1 Existing and Planned Functional Roadway Classification System

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. The description below is based on information included in the General Plans for Solano County and the City of Vacaville.

The current hierarchical system of roadways in the study area consists of the following classifications:

- ✓ **Arterial** – are four- to six-lane divided roadways, with somewhat limited access to abutting properties, and with the primary purpose of moving traffic within and between community plan areas and to and from freeways and expressways.

  Vaca Valley Parkway is a four/six-lane divided arterial. The portion of Vaca Valley Parkway within the study area runs between Orange Drive and I-80.

- ✓ **Collectors** – are two to four-lane undivided roadways, with the primary function of connecting local streets and arterials and neighborhood traffic generators and providing access to abutting properties.

  Within the study area, the portions of Orange Drive, Walnut Road, Willow Road, Kilkenny Road, Byrnes Road, and Weber Road, are two to four-lane undivided collectors.

- ✓ **Local Streets** – are two- to three-lane public or private roadways designed to provide direct access to properties while discouraging through traffic between major streets. They are intended to carry low volumes of traffic and support unrestricted on-street parking.

The Local Street category shown above is for reference only. There are no roadways designated as Local Streets in the traffic analysis study area. There are also no planned changes in the roadway system within the study area.

2.2 Affected Streets and Highways

Roadway segments near and adjacent to the Project site were analyzed to determine levels of service. The roadway segments included in this TIS are listed below.

- ✓ Vaca Valley Parkway, I-80 to Orange Drive
- ✓ Orange Drive, Vaca Valley Parkway to Walnut Road
- ✓ Walnut Road, Orange Drive to Willow Road
- ✓ Willow Road, Walnut Road to Kilkenny Road/Project Site
- ✓ Kilkenny Road/Project Site, Willow Road to Byrnes Road
- ✓ Byrnes Road, Kilkenny Road to Weber Road
- ✓ Weber Road, Byrnes Road to I-80

Existing roadway conditions are shown in Figure 2-1. Existing traffic counts were conducted by National Data & Surveying Services (NDS) in September 2025. Figures 2-2 shows existing average daily traffic.

2.3 Level of Service

Roadway segment LOS analyses were conducted using the Roadway Segment Level of Service Criteria table from the City of Vacaville General Plan. The results are shown in Table 2-1. All roadway segments in the traffic analysis study area currently operate at LOS C or better, indicating desirable roadway segment operations better than the target of LOS D.

2.4 Public Transit and Active Transport Systems

While the private automobile is the dominant mode of travel in the vicinity of the Project site, other modes of transportation are also utilized. Transit service is provided by City Coach Route 4 along Vaca Valley Parkway to the Vacaville Transportation Center and various destinations on the east side of the City. Sidewalks are located along Vaca Valley Parkway, and portions of Orange Drive.

2.5 Aviation

The Nut Tree Airport is located approximately three miles southwest of the Project site and provides a valuable resource for business and recreational air travel.

2.6 Biking Routes

Bicycling is considered an effective alternative mode of transportation that can help to improve air quality and reduce the number of vehicles traveling along existing highways, especially within cities and unincorporated communities. In Solano County's Active Transportation Plan, the segment of Leisure Town Road within the study area is designated for a Class II bikeway. No other designated bike routes currently exist within the study area.

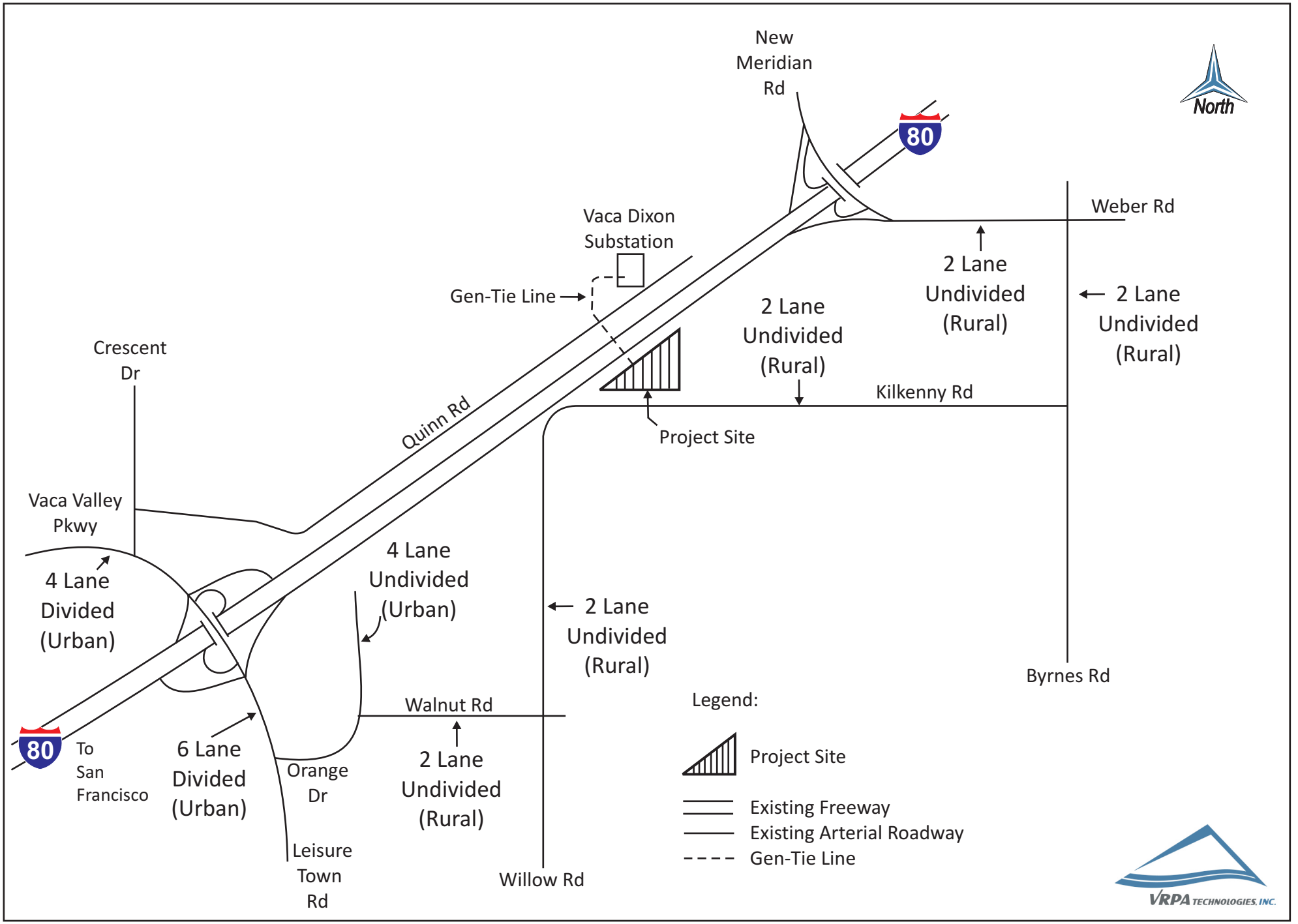
2.7 Railway Facilities

Passenger rail service connecting to Sacramento and the San Francisco Bay Area is available approximately eight miles southwest of the Project site at the Fairfield Vacaville Station via Amtrack's Capitol Corridor trains.

Vaca Dixon Power Center Transportation Impact Study

Existing Roadway Conditions

Figure 2-1



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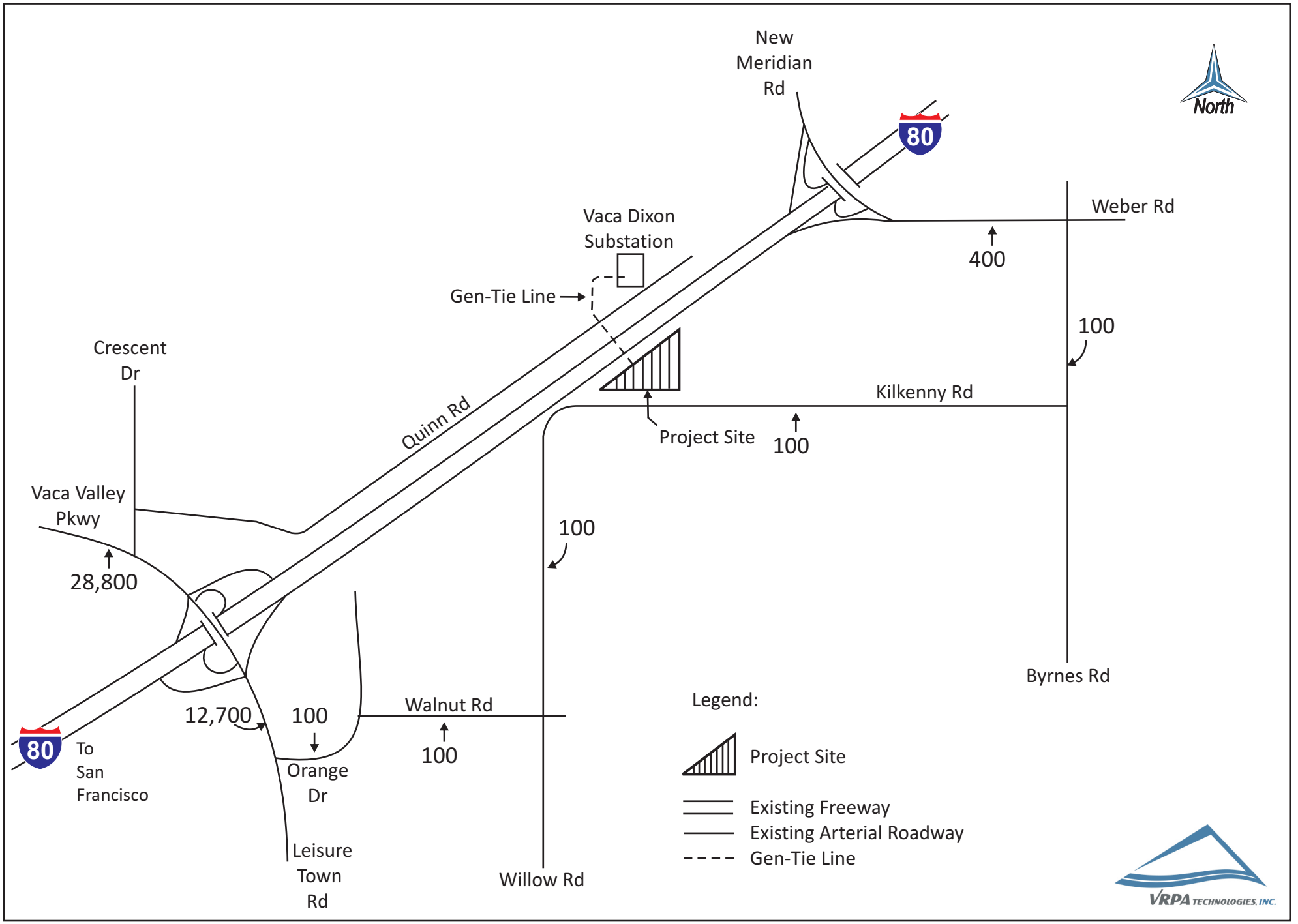
Existing Average Daily Traffic

Figure 2-2



3.0 Traffic Impacts

This chapter provides an assessment of the traffic the Project is expected to generate and the impact of that traffic on the surrounding street system.

3.1 Trip Generation

The Project includes two primary components (the Vaca Dixon and Arges BESS facilities), which will be developed in two separate phases, as well as the associated 13.8 kV and 115 kV gen-ties. Project traffic impacts were considered separately for the time periods when the Project is in operation and when the Project is under construction. During operation, the Project site will only experience occasional visits for maintenance. Therefore, the operational trip generation of the Project and the associated traffic impacts will be negligible. Additionally, construction of the gen-tie will require minimal vehicle trips to deliver materials and equipment. Therefore, the remainder of the traffic analysis focuses on construction of the Project BESS facilities. Refer to Section 3.7 for a discussion of the gen-tie construction across I-80.

To assess the impacts that the Project may have on the surrounding roadway network, the first step was to determine Project trip generation. Project trip generation for daily trips was based on information provided by the Project applicant. The maximum number of daily truck trips generated at the Project site is estimated to be 50, amounting to 100 one-way trips. Trips generated by the Project during this time period also include 40 round trips made by workers and 10 round trips made by vendors. The distribution of trips to the AM and PM peak hours and the directional distribution of trips was determined based on peak hour trip percentages from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition) using the Manufacturing land use category. The considerations described above led to the recommended trip generation for weekday AM (7:00-9:00 am) and PM (4:00-6:00 pm) peak hours shown in Table 3-1.

3.2 Trip Distribution

Haul routes for Project truck traffic are shown in Figure 3-1. It should be noted that all Project truck traffic is expected to access the Project site using the I-80/New Meridian Road/Weber Road interchange and that truck traffic will be expected to use Kilkenny Road, Byrnes Road, and Weber Road for access to I-80 to the east and west.

Separate Project trip distributions are shown for trucks and autos in Figure 3-2 and 3-3, respectively. The truck trip distribution was based on the haul routes shown in Figure 3-1. The auto trip distribution is based upon knowledge of the study area, engineering judgement, prevailing traffic patterns in the study area, major routes, population centers, and other existing developments. In contrast to truck traffic auto traffic is expected to use the Vaca Valley

Parkway/Leisure Town Road interchange for access to I-80 to the west and the New Meridian Road/Weber Road interchange for access to I-80 to the east.

3.3 Project Traffic

Trips generated during the construction phase of the Project were distributed to the roadway system using the trip distribution percentages shown in Figure 3-2 and 3-3. A graphical representation of the resulting daily Project trips in passenger car equivalents is shown in Figure 3-4.

3.4 Existing Plus Project Traffic Conditions

An Existing Plus Project scenario was analyzed to include existing traffic plus traffic generated by the Project on the existing specified roadway facilities. The traffic generated by the project in construction phase was added to the existing counts to analyze the impacts in the study area. The resulting traffic is shown in Figure 3-5. Roadway segment capacity analysis is shown in Table 3-2. With the addition of Project traffic, all roadway segments in the traffic analysis study area are expected to operate at LOS D or better. In addition, no roadway segment is expected to experience a change in level of service in comparison to its current condition.

3.5 Near-Term (Year 2029) Traffic Conditions

The impacts of the Project were analyzed considering near-term traffic conditions corresponding with the peak of construction activity. This analysis was based on 2029 conditions since that is the expected time of peak construction activity. The levels of traffic expected in 2029 were determined by interpolating existing traffic and 2035 traffic forecasts from the City of Vacaville General Plan. The resulting traffic is shown in Figure 3-6.

3.6 Near-Term (Year 2029) Plus Project Traffic Conditions

A Near-Term (Year 2029) Plus Project scenario was analyzed to include 2029 traffic plus traffic generated by the Project on the existing specified roadway facilities. The traffic generated by the Project in construction phase was added to the existing counts to analyze the impacts in the study area. The resulting traffic is shown in Figure 3-7. Roadway segment capacity analysis is shown in Table 3-3. With the addition of Project traffic, all roadway segments in the traffic analysis study area are expected to operate at LOS D or better. In addition, no roadway segment is expected to experience a change in level of service in comparison to its current condition.

3.7 Crossing of I-80 for Installation of Gen-Tie Line

The project includes the installation of a gen-tie line that will extend from the project site to the north side of I-80. Construction of the gen-tie line will require closure of at least a portion of I-80 on a temporary basis. This will require the applicant to secure an agreement from Caltrans that will specify the times of closure, the lanes that are to be closed, traffic control features that would be necessary, and other requirements to complete the installation. The encroachment permit process will include an analysis to determine when and how many lanes could be closed in order to avoid substantial delays or traffic disruption. This will not result in any permanent effect on traffic.

3.8 Vehicle Miles (Traveled) Analysis

The Project will have a less than significant VMT impact based on the following:

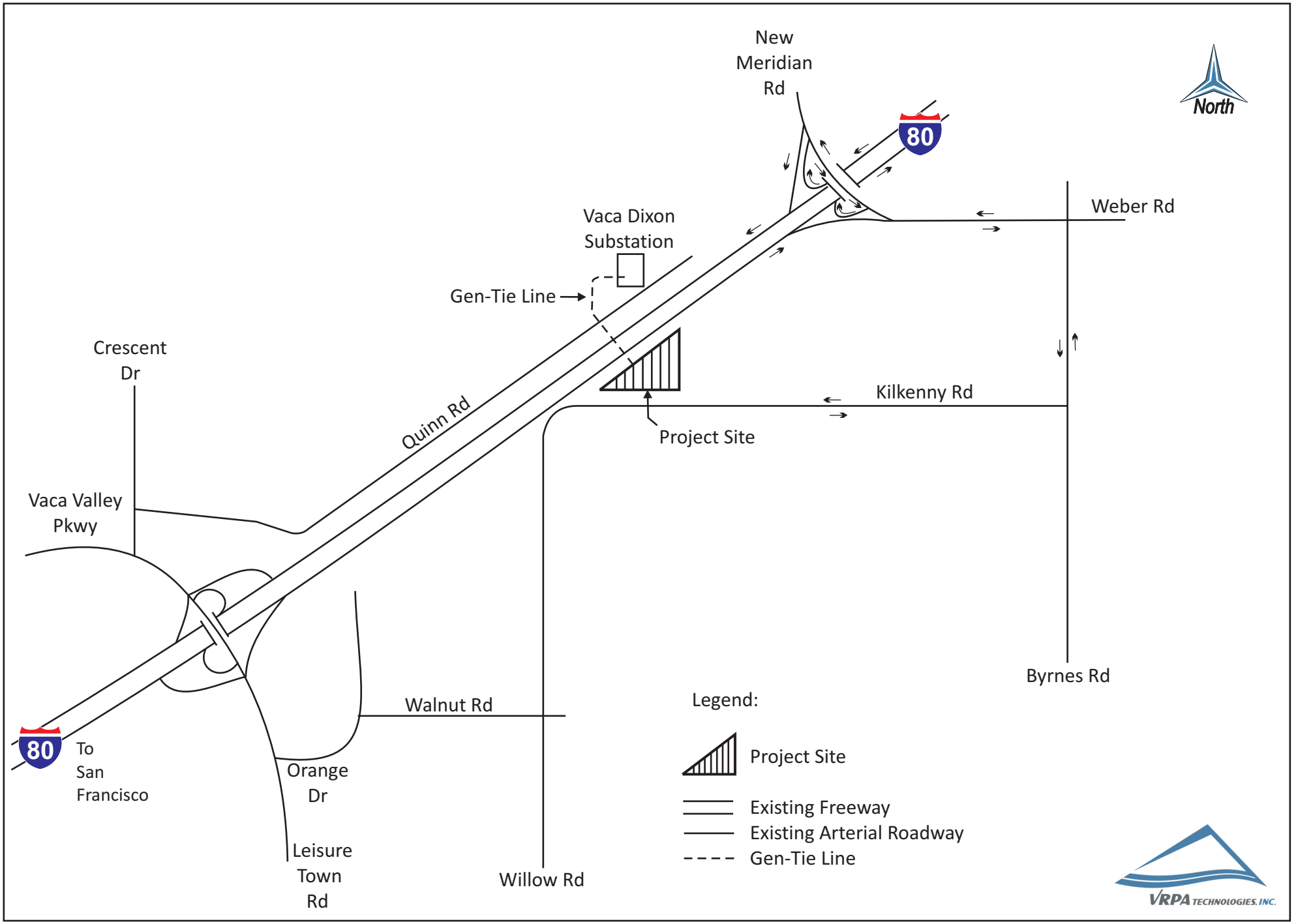
- ✓ During operation of the project only a small number of trips will be made to the site to perform maintenance activities. Therefore, the VMT increase generated by the Project will be negligible.

- ✓ During construction of the Project, the VMT generated will be temporary and will therefore be less than significant. It should also be noted that truck trips are excluded when determining VMT impacts.

Vaca Dixon Power Center Transportation Impact Study

Project Haul Routes

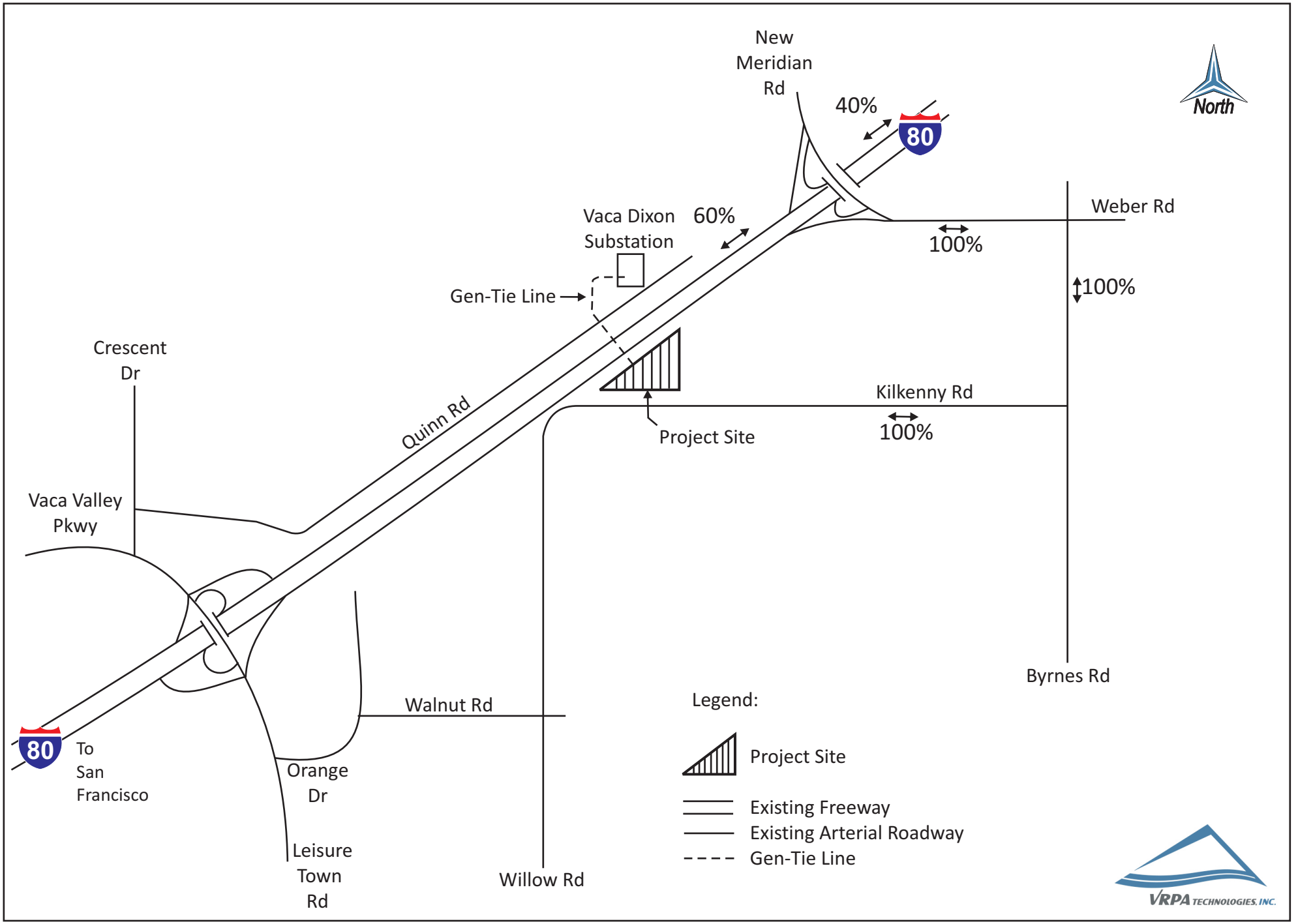
Figure 3-1



Vaca Dixon Power Center Transportation Impact Study

Trip Distribution - Trucks

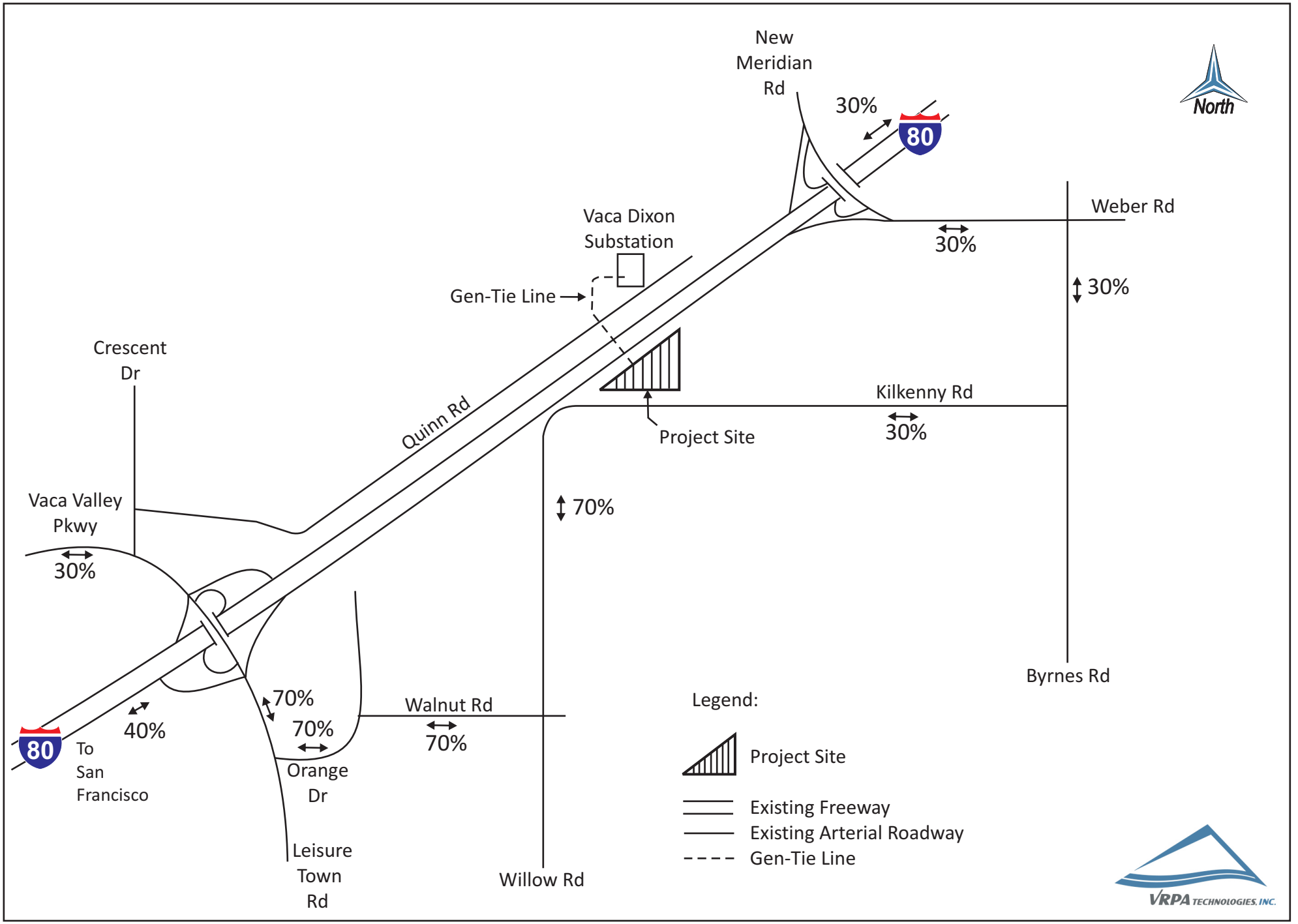
Figure 3-2



Vaca Dixon Power Center Transportation Impact Study

Trip Distribution - Autos

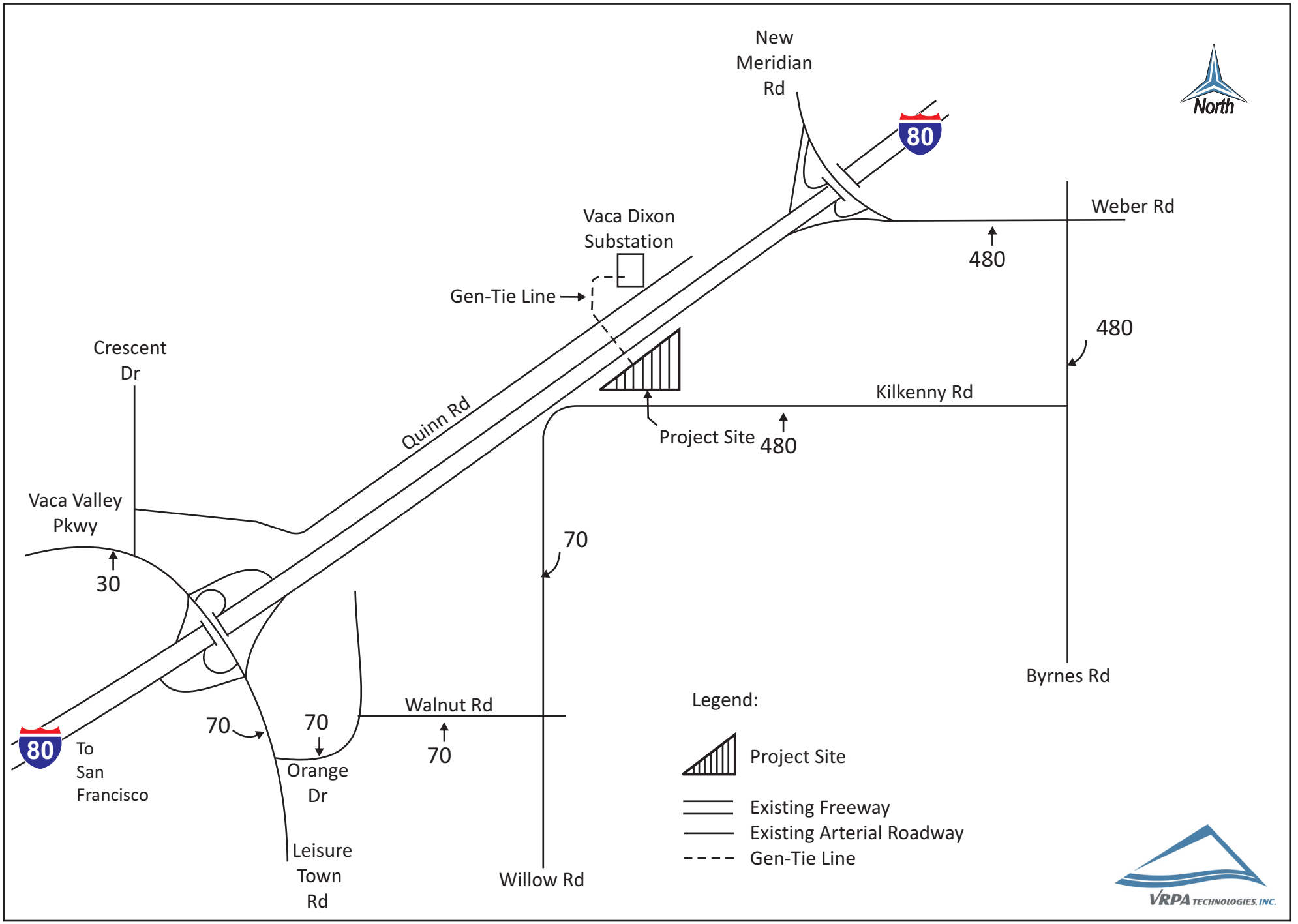
Figure 3-3



Vaca Dixon Power Center Transportation Impact Study

Project Daily Traffic (Passenger Car Equivalents)

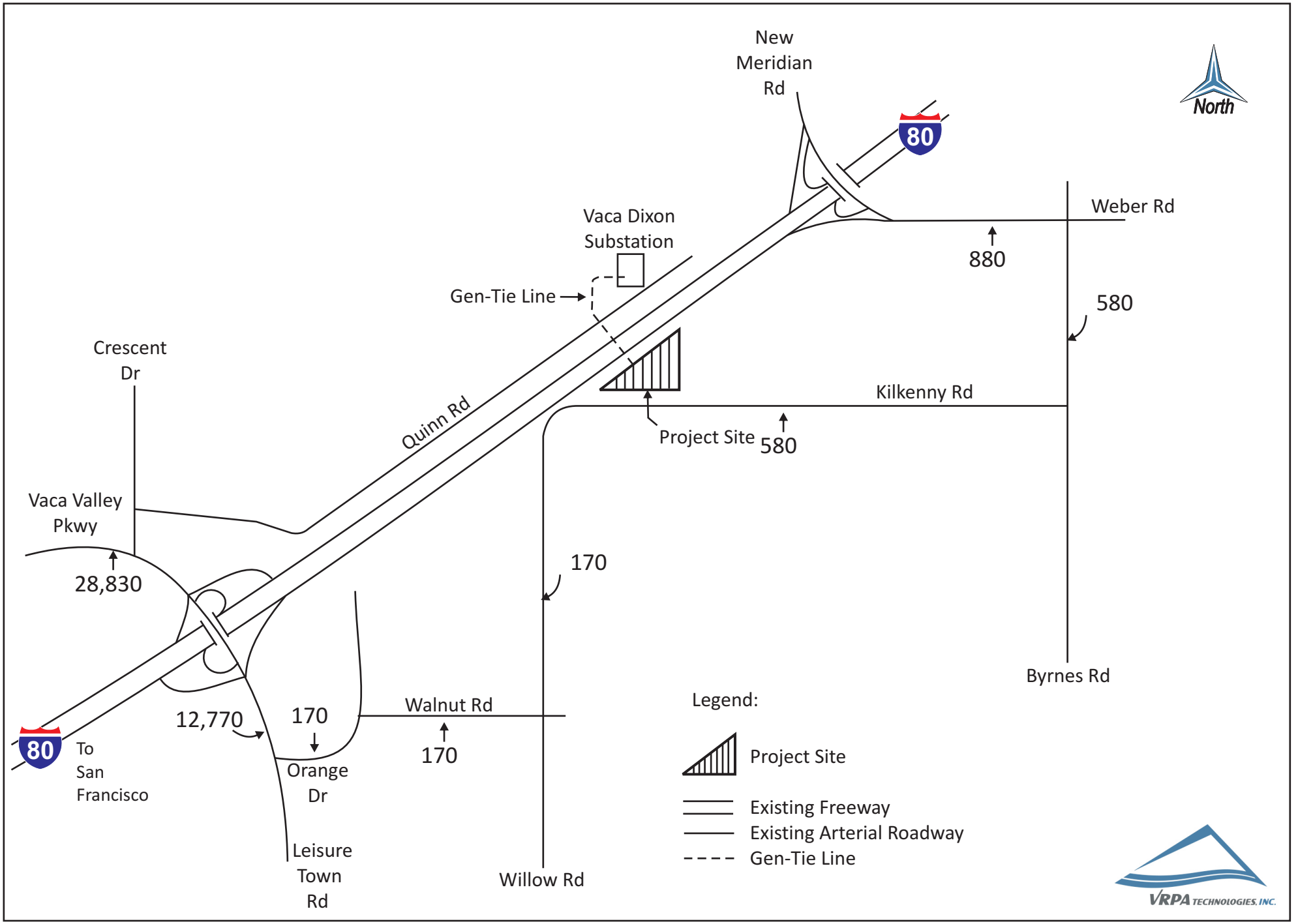
Figure 3-4



Vaca Dixon Power Center Transportation Impact Study

Existing Plus Project Average Daily Traffic (Passenger Car Equivalents)

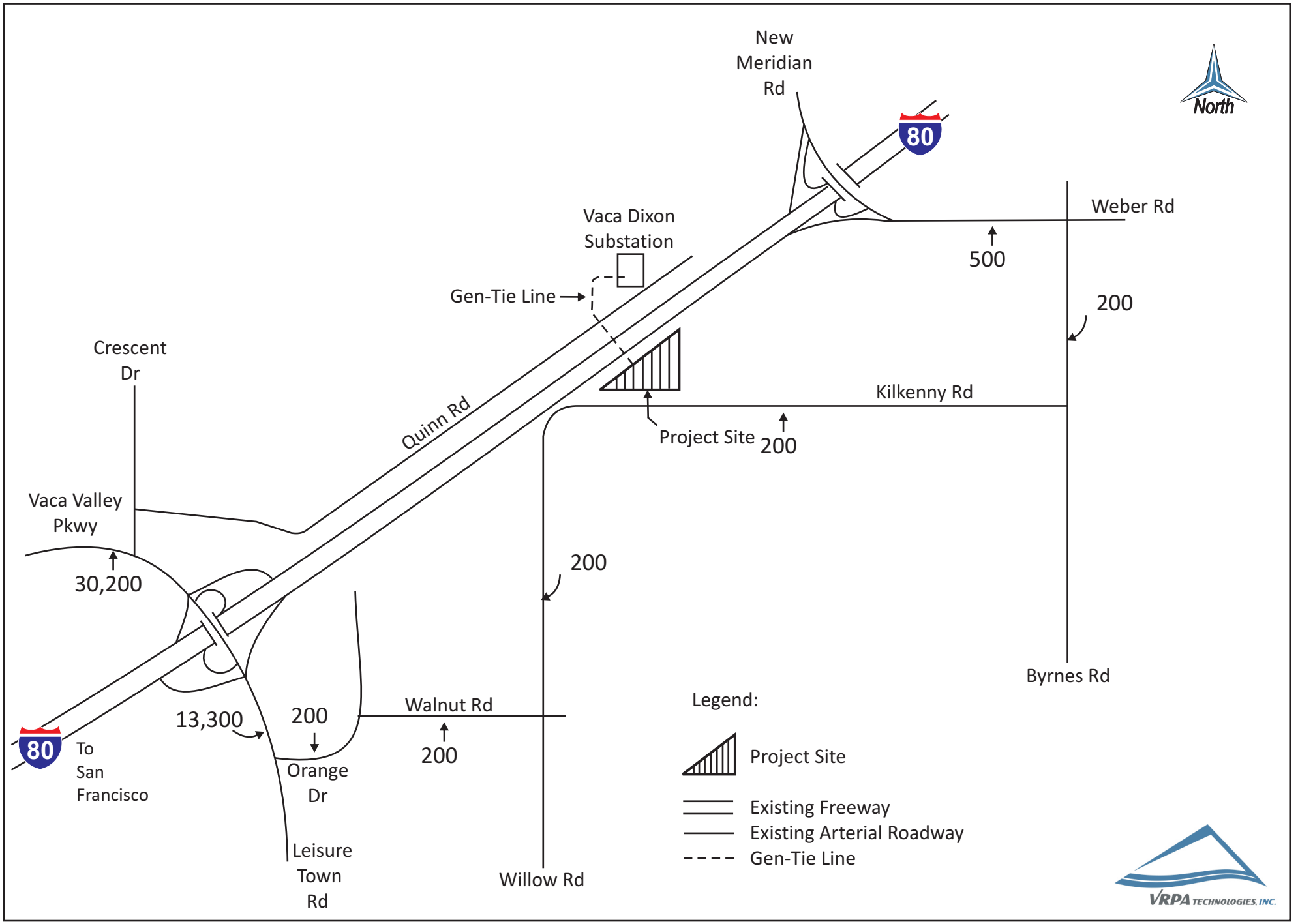
Figure 3-5



Vaca Dixon Power Center Transportation Impact Study

Near Term (2029) No Project Average Daily Traffic

Figure 3-6



Vaca Dixon Power Center Transportation Impact Study

Near Term (2029) Plus Project Average Daily Traffic

Figure 3-7

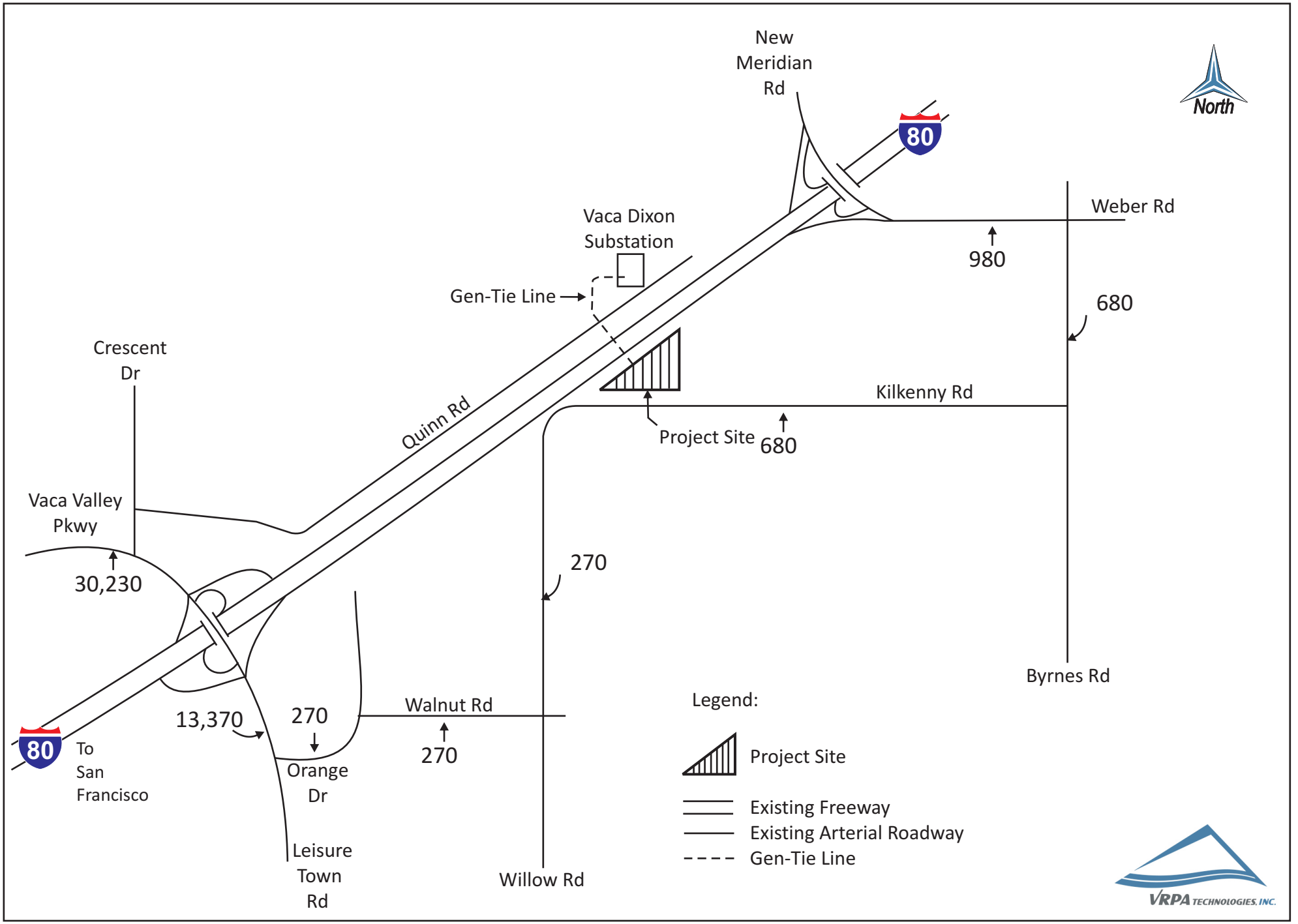


Table 3-1
Vaca Dixon and Argess BESS
Trip Generation During Construction - 8/11/25

Autos

								AM Peak Hour Trips				PM Peak Hour Trips	
Land Use	ITE Code (1)	Units	Size	Daily Trip Generation Rate	Daily Trips	AM Peak Hour %	In:Out Split	In	Out	PM Peak Hour %	In:Out Split	In	Out
Energy Storage Facility	140	Workers	50	2.00	100	14.0%	77:23	11	3	16.0%	32:68	5	11
					100		Subtotal	11	3		Subtotal	5	11
							Total trips	14			Total trips	16	

Trucks

								AM Peak Hour Truck Trips				PM Peak Hour Truck Trips	
Land Use	ITE Code (1)	Units	Size	Daily Trip Generation Rate	External Daily Trips	AM Peak Hour rate	In:Out Split	In	Out	PM Peak Hour rate	In:Out Split	In	Out
Energy Storage Facility	140	N/A	N/A	N/A	100	14.2%	50:50	7	7	15.4%	50:50	8	8
					100		Subtotal	7	7		Subtotal	8	8
							Total trips	15			Total trips	16	

Total Vehicles

								AM Peak Hour Trips				PM Peak Hour Trips	
Land Use	ITE Code (1)	Units	Size	Daily Trip Generation Rate	External Daily Trips	AM Peak Hour rate	In:Out Split	In	Out	PM Peak Hour rate	In:Out Split	In	Out
Energy Storage Facility	140	N/A	N/A	N/A	200	N/A	N/A	19	10	N/A	N/A	13	19
					200		Subtotal	19	10		Subtotal	13	19
							Total trips	29			Total trips	31	

Passenger Car Equivalents (2)

								AM Peak Hour Trips				PM Peak Hour Trips	
Land Use	ITE Code (1)	Units	Size	Daily Trip Generation Rate	External Daily Trips	AM Peak Hour rate	In:Out Split	In	Out	PM Peak Hour rate	In:Out Split	In	Out
Energy Storage Facility	140	N/A	N/A	N/A	400	N/A	N/A	33	26	N/A	N/A	29	35
					400		Subtotal	33	26		Subtotal	29	35
							Total trips	59			Total trips	65	

Notes:
(1) Daily total trip generation for autos and trucks was based on the project description. Peak hour trip percentages and inbound/outbound distribution was based on the Manufacturing category (Land Use Code 140) from the Institute of Transportation engineers Trip Generation Manual, 11th Edition.
(2) Passenger car equivalents were estimaed to be 1.0 for autos and 3.0 for trucks.

Table 3-2
Existing Plus Project Roadway Segment Operations

STREET SEGMENT	SEGMENT DESCRIPTION	TARGET LOS	EXISTING	
			(Average Daily Traffic) ADT	Level of Service (LOS)
Vaca Valley Parkway				
West of I-80	4 Lane Divided	D	28,830	D
Leisure Town Road				
I-80 to Orange Drive	6 Lane Divided	D	12,770	A
Orange Drive				
Leisure Town Road to Walnut Road	4 Lane Undivided	D	170	A
Walnut Road				
Orange Drive to Willow Road	2 Lane Undivided	D	170	A
Willow Road				
Walnut Road to Kilkenny Road	2 Lane Undivided	D	170	A
Kilkenny Road				
Willow Road to Byrnes Road	2 Lane Undivided	D	580	A
Byrnes Road				
Kilkenny Road to Weber Road	2 Lane Undivided	D	580	A
Weber Road				
Byrnes Road to I-80	2 Lane Undivided	D	880	A

LOS = Level of Service

Table 3-3
Year 2029 Plus Project Roadway Segment Operations

STREET SEGMENT	SEGMENT DESCRIPTION	TARGET LOS	EXISTING	
			(Average Daily Traffic) ADT	Level of Service (LOS)
Vaca Valley Parkway				
West of I-80	4 Lane Divided	D	30,230	D
Leisure Town Road				
I-80 to Orange Drive	6 Lane Divided	D	13,370	A
Orange Drive				
Leisure Town Road to Walnut Road	4 Lane Undivided	D	270	A
Walnut Road				
Orange Drive to Willow Road	2 Lane Undivided	D	270	A
Willow Road				
Walnut Road to Kilkenny Road	2 Lane Undivided	D	270	A
Kilkenny Road				
Willow Road to Byrnes Road	2 Lane Undivided	D	680	A
Byrnes Road				
Kilkenny Road to Weber Road	2 Lane Undivided	D	680	A
Weber Road				
Byrnes Road to I-80	2 Lane Undivided	D	980	A

LOS = Level of Service

4.0 Conclusions

The traffic analysis is focused on the construction phase of the Project as the number of trips generated by the Project while under operation will be negligible.

The traffic analysis concluded that with the addition of Project traffic in the expected peak construction year of 2029, all roadway segments within the study area are expected to operate at level of service D or better, indicating desirable levels of traffic operations. In addition, no roadway segment is expected to experience a change in level of service in comparison to its current condition in any of the scenarios that were analyzed.