DOCKETED	
Docket Number:	23-OPT-01
Project Title:	Fountain Wind Project
TN #:	248320-3
Document Title:	Traffic Report
Description:	N/A
Filer:	Caitlin Barns
Organization:	Stantec Consulting Services, Inc.
Submitter Role:	Applicant Consultant
Submission Date:	1/4/2023 1:58:57 PM
Docketed Date:	1/4/2023

Westwood

TRAFFIC STUDY

Fountain Wind Power

Shasta County, California

March 20, 2019

Prepared For:

Avangrid Renewables, LLC
1125 NW Couch St, Suite 700
Portland, OR 97209

Westwood

Traffic Study

Fountain Wind Project

Shasta County, California
Project Number: 0012693.00
Date: 03/20/2019

Prepared for:

AVANGRID RENEWABLES

Prepared by:

Westwood

CONTENTS

EXHIBITS

1.0 INTRODUCTION

The Fountain Wind project is proposed as up to a 347 MW wind energy conversion system (WECS) of up to 100 wind turbines with associated access roads, collection system, transmission system, meteorological (MET) towers, operations and maintenance facility (O&M), staging yards, step-up substation, and switching substation. The construction of the Fountain Wind project will generally require mainly conventional, including construction worker personal vehicles, logging trucks, aggregate dump trucks, concrete ready-mix trucks, single unit trucks, semi-tractor trailer trucks, and several types of specialized transportation vehicles for the oversize/overweight vehicles associated with the delivery of wind turbine components. The other anticipated oversized deliveries will be the substation main power transformers (MPTs).

The scope of this report is to determine the total number of vehicles entering the project site from public roads and to calculate the approximate peak hourly traffic entering the site from public roads. Trips are summarized as trips each way. Trips for both the delivery and removal of equipment, field offices, and temporary aggregate surfaces are shown.

2.0 TRAFFIC PROJECTION

Traffic entering the project site will include construction workers, materials delivery, and equipment delivery. Materials deliveries include aggregate, concrete, and water, as well as turbines, electrical equipment and cables, and items such as reinforcing steel and forms for concrete foundations. All traffic will reach the site using State Route (SR) 299. Manufactured components will likely originate from Interstate 5 (I-5) to the west or US 395 and SR 139 to the east. The direction of turbine component deliveries is not known at this time, so traffic impacts were reviewed for both directions. Locally sourced materials such as aggregate and water will likely come from Burney, approximately 6 miles to the east of the project site, or from pits and quarries east of Burney. If the concrete if not batched on-site, there are several concrete plants in Redding about 35 miles to the west of the project site that will likely be the source. Project workers will most likely commute from both east and west of the project. Redding, is the largest town in the region. Other towns west of the project are very small and not likely to be able to accommodate many project workers. Several small towns including Burney, Fall River Mills, and McArthur are located east of the project. For this study the split for commuting traffic is assumed to be 60 percent from the west and 40 percent from the east on SR 299. See Exhibit 1.

There are currently three access points for the project identified. The access roads all use existing logging roads at their intersections with SR 299. None of the existing logging roads have turn lanes, but all three have widened shoulders, as does Moose Camp Road, the only road intersection in the vicinity of the project that is not associated with plant entrance or second intersection road. The Shasta Green plant entrance has turn lanes, but the Sierra Pacific Industries plant does not. The access road to the Hatchet Ridge Wind Farm has a left turn lane in the east bound direction. The wind farm entrance is associated with a local road on each side

of SR 299, and it appears there is a hill climbing lane, east bound, at the summit of Hatch Mountain Pass.

The two entrances south of SR 299 will serve the majority of the wind turbines and project facilities. The access road north of SR 299 will serve only a few wind turbines. As a result the heaviest direction for peak hour traffic (east bound) will make right turns at the access roads, and the lighter direction of traffic (west bound) will make left turns into the project site.

The highest existing average daily traffic (ADT) on SR 299 is 20,900 vehicles per day at I-5 in Redding where the highway has four lanes. The peak hour volume is 2150 vehicles. The capacity of the road is approximately four time the volume, so there is adequate capacity to accommodate construction traffic. Between I-5, in Redding and US 395, in Alturus, California there are 27 intersections with ADT and peak hour volume listed. East of Pine Street, in Johnson Park (on the east edge of Redding), the peak hour volume never exceeds 470 vehicles. See Exhibit 2. Elm Street, on the west end of Burney is one of the few listed intersections that does not include turn lanes. Peak hour volume is 860 vehicles to the east. The section of SR 299 where the three access roads to Fountain Wind are located has a peak hour volume of 300 vehicles. See Tamarack Road volumes in Exhibit 2.

After construction of the wind farm, operations and maintenance traffic will be limited to a few passenger vehicles per day.

The project will employ an estimated 400 construction workers, project management staff, equipment operators, survey staff, and delivery vehicle drivers during the peak period, with the average number of workers on-site in the range of 325 based on preliminary schedule development. The estimate of workers and delivery vehicles was developed using a construction estimate based on time and materials and using crew productivity data from RS Means. The total number of trips was determined by using the number of employees in each of the categories listed above; dividing that number by an estimated vehicle occupancy, (2.0 for survey crews, 1.5 for all other categories, except for delivery vehicles with an occupancy of 1.0); and multiplying by the number of work days for each employee category. The estimated number of work days for each category are: 100 days for survey; 250 days for construction trades; 250 days for project management staff; 200 for equipment operators; and 230 days for deliveries.

General summaries of the construction work tasks and related delivery and construction vehicles are listed below.

3.0 WORK TASKS

Work Tasks are generally listed in chronological order, but extensive overlap can be expected depending on the contractor scheduling.

- Survey project site
- Install and maintain erosion and sediment control

- Clear and grub laydown, substations, O&M, access roads, and turbine pads areas
- Grade field office and O&M locations
- Deliver and Install Field Office trailers
- Grade temporary laydown areas
- Improve logging roads/construct access roads – grade and place aggregate
- Erect security fencing – enclosing laydown yards and facilities
- Excavate turbine foundations
- Place foundation mud mat
- Place foundation reinforcing
- Place foundation forms
- Place foundation concrete
- Strip forms
- Backfill foundations
- Unload turbine components
- Erect turbine tower sections using base crane
- Erect top turbine tower section, nacelle, hub, and blades using topping crane
- Grade transformer pad areas
- Install turbine transformers
- Connect turbine to transformer wiring
- Grade substation and switching substation areas
- Construct substation and O&M foundations
- Trench underground collector system (34.5kV)
- Install overhead collection system lines (34.5kV)
- Construct O&M Facility
- Construct substation and switching substation equipment and main power transformer foundations
- Install step-up substation and switching substation equipment and SCADA
- Place step-up substation and switching substation aggregate
- Install security fence around step-up substation and switching substation
- Connect step-up substation to switching substation
- Connect switching substation to transmission line
- Test and commission equipment
- Remove field offices, security fencing, and replace topsoil
- Remove staging area security fences and replace topsoil
- Restore, revegetate, and remove temporary erosion and sediment control

4.0 CONSTRUCTION EQUIPMENT

Examples of the types of equipment generally used in wind farm construction:

- Survey – one pick-up truck for each 2 person crew
- Erosion and sediment control – Silt fence trenchers
- Grading (field office location, staging areas, O&M facility, step-up substation, and switching substation) – medium bulldozers, scrapers, road grader, compaction rollers, and water trucks

- Logging road/access road improvements – medium bulldozers, road grader, scrapers, compaction rollers, and water trucks
- Materials handling equipment (unloading wind turbine components) – hydraulic (helper) cranes, small flat-bed trailers pulled by pick-up trucks, heavy crawler cranes
- Security fencing – skid-steer with auger attachment, and hydraulic post driver attachment, and hand tools for each crew
- Turbine foundations – medium bulldozer, excavator, hydraulic crane, and concrete pump truck
- Tower base erection – hydraulic (helper) cranes and base crane
- Tower top/nacelle/hub/blades erection – Hydraulic cranes and topper crane
- Pad mounted transformers at each turbine – truck mounted or mobile hydraulic crane
- Turbine wiring – hand tools
- 34.5 kV underground collector trenching – specialized trenching equipment, cable plows, and back hoes, cable reel trailers
- 34.5 kV overhead collection line – backhoe with auger attachment, specialized pole setting equipment (boom trucks), bucket trucks, cable reel trailers
- O&M and substation equipment foundations – back hoe
- Substation construction – bulldozer, backhoe, compaction roller, water trucks, mobile hydraulic crane, large crane (MPT)
- Switching substation construction – bulldozers, backhoes, compaction rollers, water trucks, mobile hydraulic crane
- Substation to interconnect transmission line – foundation auger mounted on back hoe, mobile hydraulic crane
- O&M Building – mobile hydraulic crane
- Removal of temporary aggregate (field office location and staging areas) – Front end loader
- Revegetation and removal of erosion and sediment control – chisel plow (decompaction), small tractor and tilling equipment, skid steer loader, hydro seeding/hydro-mulching equipment

5.0 MATERIALS

Examples materials used in the construction of wind farms:

- Silt fence, bio log, and other erosion and sediment control materials
- Aggregate (access roads, staging areas, O&M facility, substations)
- Security fencing (field office location, staging areas, substations)
- Field Offices and storage trailers
- Formwork for foundations (Equipment pads, O&M, substation transformers and equipment, and switching substation equipment)
- Rebar for above concrete foundations
- Concrete for wind turbine foundations and transformer pads
- Concrete for O&M facility foundation
- Concrete for substation foundations (Main Power Transformer (MPT), electrical equipment, and control building)
- O&M Building materials
- Collection system wiring (underground and overhead)

- Electrical equipment (transformers, switch gear, circuit breakers, junction boxes, conduit, SCADA, etc.)
- Structural steel for substation racking
- Structural steel poles for overhead collection line
- Main power transformers
- Transmission line cables (from switching substation to transmission line)
- Water for aggregate/backfill compaction, vegetation establishment, and dust control
- Miscellaneous consumables
- Plant stock, seed, and mulch

6.0 MATERIAL DELIVERY VEHICLES

Types of vehicles used for material deliveries:

- Semi-Trailer Flatbed Trucks for hauling logs off of site
- Single Unit Flatbed Trucks - Erosion and sediment control materials, plant stock, seed, and mulch, miscellaneous consumables
- Gravel Semi-Trailer Dump Trucks with a 16 cubic yard load capacity (loose volume) with an approximate gross vehicle weight of 80,000 pounds and a load weight of approximately 40,000 pounds.
- Field office trailers
- Concrete Trucks- with a 10 CY capacity, weighing approximately 69,000 pounds
- Semi-Trailer Flat Bed – security fence, concrete forms, rebar, O&M building components, transformers, miscellaneous turbine materials, structural steel for substations, electrical equipment for substation, - Non-permit load size 8'-6" x 8'-6" x 48'-0", gross vehicle weight 80,000 pounds, up to 45,000 pound loads
- Cable trailers – 34.5 kV underground, 34.5 kV overhead, and overhead transmission from switching substation to transmission line
- Overhead collection system pole trailers
- Water trucks – 4000 gallon capacity, single unit tank trucks, weighing approximately 59,000 pounds
- Lowboy Multi-Axel Trailer –Main power transformer, substation control building
- Workers' trucks (Pick-up trucks –average 1.5 occupants)

7.0 EQUIPMENT DELIVERY VEHICLES

Types of vehicles used for the delivery of construction equipment:

- Lowboy semi-trailer – Logging equipment, bulldozers, scrapers, compaction rollers, road grader, excavator, trenching equipment, backhoes, hydraulic (helper) cranes, crawler cranes, skid steer loaders, trenchers, cable plows, agricultural plows
- Single unit flatbed truck – Hydro much/hydro-seed equipment
- Small flatbed trailers towed behind pick-up trucks for small equipment and tools

8.0 CONSTRUCTION

Construction of wind farms requires that a few tasks be repeated across the project site. Some sequencing of tasks is required, but many tasks may overlap across the site for efficient

scheduling. The exceptions are construction of the operations and maintenance facility, substation, switching substation, and underground and overhead collection systems which are not constrained by precedent activities.

9.0 SCHEDULE

For the purpose of determining the daily volume of traffic, construction time is assumed to be two years, with construction occurring only during the spring, summer and fall. Wind farm sites are large and allow many crews to work simultaneously without interfering with one another, but the size of the project (number of wind turbines) impacts the construction time significantly because the cost of mobilizing the large cranes required for erection is high, and the cranes are in such high demand that mobilizing a small number of cranes is typical on wind projects. The logistics of delivering the oversized loads for the wind turbines, with the use of specialized transportation vehicles, also creates schedule constraints.

10.0 SUMMARY:

Exhibit 3 shows types and number of vehicles projected for the construction of the Fountain Wind Project. The design of the project is preliminary, so material quantities are based on information contained in the permitting documents and preliminary CADD design files used to determine the feasibility of grading access roads and turbine pads. The specific assumptions for each line item are shown in the Notes/Assumptions column.

The project should generate approximately 70,300 trips each way. Approximately 34,400 of these trips are commuting trips by the construction workers and project management staff. Aggregate is responsible for the largest portion of the material trips. Construction equipment deliveries account for a small amount of the trips, and turbine component deliveries account for only about 1800 trips in a two year period. The maximum number of turbine component delivery trips is approximately 10 deliveries per day. These deliveries can be scheduled to avoid the peak hours.

State Route 299 east of the project site will see a slightly larger number of trips than SR 299 west of the project site as delivery of aggregate, water, and a share of the worker commuting trips may originate within, and to the east of Burney. State Route 299 west of the project site will likely be the source for concrete, turbines and other components, and a small majority of the commuting trips. Based on the relative sizes of, and distances to, Redding and the small towns east of the project site, this traffic estimate uses 60 percent of the construction worker traffic using SR 299 from the west, and 40 percent using SR 299 from the east of the project.

Based on a project duration of approximately 250 work days, peak hour vehicle counts will be approximately 197 trips each way per day, with the highest hourly volume of approximately 112 vehicles per hour during the morning and afternoon peaks on SR 299 from the west, and 85 vehicles per hour from the east. The majority of the peak hour project related trips are

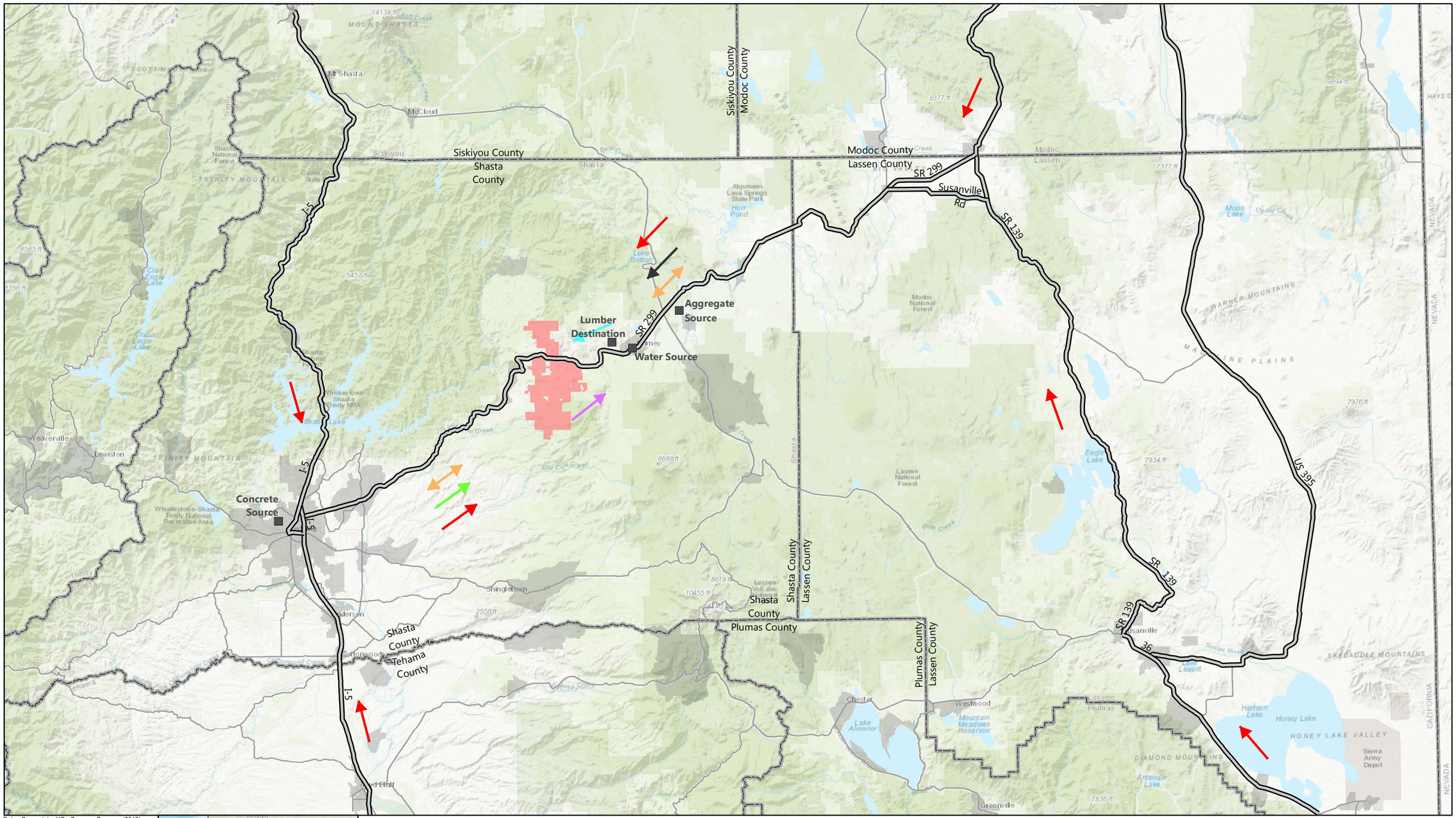
commuting trips. A portion of the commuting trips will occur before the peak hour since it is customary on construction projects to begin work earlier than other types of work.

Adding the peak hour work trips to existing peak hour volumes tabulated in the 2014 Traffic Volumes Book (Exhibit 2) results in a number of trips that is below the capacity of the listed intersections. Most of the intersections on SR 299 have additional through and/or turn lanes.

The material delivery vehicle trips will be spread out throughout the day. The maximum number of aggregate deliveries per day is approximately 90 deliveries, constrained by the loading and unloading times. The maximum number of concrete deliveries per day is approximately 50 deliveries (100 trips), constrained by the rate that ready mix plants can batch concrete, and the rate the contractor can unload trucks. The maximum rate of deliveries is approximately 6 to 8 per hour, equivalent to placing a wind turbine foundation during a single work shift.

At the three project driveways the maximum current peak hour volume is 300 vehicles. In the worst case scenario, all project traffic using the same entrance, the peak hourly volume is projected to be 497 vehicles. Using a conservative assumption that 200 of these vehicles are in the opposing direction (west bound), and the entrance being used is the access road to the north so that the left turning vehicle volume is 112. This volume of advancing traffic is less than 215 vehicles which is the limit shown in Exhibit 9-75 of the AASHTO Policy on Geometric Design of highways and Streets for considering left-turn facilities, with a 60 mile per hour operating speed and the highest percentage of turning traffic.

Based on this analysis left turn lanes are not warranted for any of the Fountain Wind access road during construction.



Data Source(s): US Census Bureau (2018); Westwood (2019); .

Legend

- Worker Commute Route
- Aggregate Delivery Route
- Concrete Delivery Route
- Timber Removed Route
- Turbine/Other Delivery Route
- Water Delivery Route
- Project Boundary
- Material Location

N

0 10 Miles

Fountain Wind Project

Shasta County, California

Delivery Route

EXHIBIT 1

March 15, 2019

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Map Document: N:\0012693.00\GIS\FW_DeliveryRoute_811_190315.mxd 3/15/19 1:40:33 PM NEObrien

Exhibit 2

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
1	299	HUM	R	7.139	OLD HIGHWAY	520	5500	3800	370	5000	3700
1	299	HUM		19.05	BAIR ROAD	370	5000	3700	460	4900	3500
1	299	HUM		38.833	WILLOW CREEK, JCT. RTE. 96 NORTH	460	4900	3500	650	6200	4800
1	299	HUM		38.9	WILLOW CREEK, RIVER ROAD	650	6200	4800	650	6400	4900
1	299	HUM		41.86	GAMBI VILLAGE, EAST	500	5000	3800	450	4900	3700
1	299	HUM		43.035	HUMBOLT/TRINITY COUNTY LINE	450	4650	3700			
2	299	TRI		0	HUMBOLT/TRINITY COUNTY LINE				290	3300	3000
2	299	TRI		1.3	EAST LIMITS SALYER	290	3300	3000	260	3100	2700
2	299	TRI		11.53	BURNT RANCH ROAD	240	2900	2500	190	1900	1600
2	299	TRI		21.731	DEL LOMA	190	1900	1600	190	1900	1600
2	299	TRI		24.263	LITTLE FRENCH CR	190	1900	1600	190	1900	1600
2	299	TRI		31.45	BIG FLAT CMP-WHEEL GLUCH RD	190	1900	1600	270	2600	1950
2	299	TRI		51.03	WEAVERVILLE, WEST CITY LIMITS	340	3300	2650	340	3300	2650
2	299	TRI		52.07	WEAVERVILLE, WASHINGTON STREET	1100	11300	10600	810	9400	8800
2	299	TRI		52.72	MARTIN/NUGGET ROADS	810	9400	8800	660	6500	6200
2	299	TRI	R	58.11	EAST JCT. RTE. 3	570	5300	4400	390	4050	3800
2	299	TRI		63.51	LEWISTON ROAD	390	4050	3800	340	3700	3200
2	299	TRI		67.425	NEW LEWISTON ROAD	340	3700	3200	390	3950	3400
2	299	TRI		72.246	TRINITY/SHASTA COUNTY LINE	390	3950	3400			
2	299	SHA		0	TRINITY/SHASTA COUNTY LINE				390	3950	3400
2	299	SHA		8.648	FRENCH GULCH ROAD	390	3950	3400	450	4900	4000
2	299	SHA		16.47	KENNEDY DRIVE	460	5000	4050	520	6100	5000
2	299	SHA		17.739	ROCK CREEK ROAD	520	6100	5000	1100	12500	9700
2	299	SHA		21.648	REDDING, WEST CITY LIMITS	1150	12500	10000	1150	12500	10000
2	299	SHA		22.226	REDDING, BUENAVENTURA BLVD	1150	12500	10000	1400	15100	12300
2	299	SHA		23.81	REDDING, COURT STREET	2050	21000	19700	1850	20800	19800
2	299	SHA		24.088	JCT. RTES. 273 AND 299	1850	20800	19800	1850	20800	19800
2	299	SHA		24.822	REDDING, JCT. RTE. 5	1850	20800	19800	2150	22300	20900
2	299	SHA		25.54	HAWLEY ROAD	2150	22300	20900	1250	13700	12700
2	299	SHA		27.239	OLD OREGON TRAIL	1250	13700	12700	870	9800	9100
2	299	SHA		31.46	DESCHUTES ROAD	780	9100	7700	440	4750	4300

Exhibit 2

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
2	299	SHA		53.263	TERRY MILL ROAD	400	4400	3300	380	4300	3300
2	299	SHA		60.05	BIG BEND ROAD	340	3700	2700	330	3450	2600
2	299	SHA		73.13	TAMARACK ROAD	300	3150	2800	300	3150	2800
2	299	SHA		74.48	ELM STREET	350	3500	2300	860	8500	8100
2	299	SHA		74.98	BURNEY, PLUMAS STREET	860	8500	8100	860	8500	8100
2	299	SHA		76.181	BLACK RANCH ROAD	860	8500	8100	510	6000	5400
2	299	SHA		78.65	PINE ST LT	510	6000	5400	420	4700	4000
2	299	SHA		80.085	FOUR CORNERS, JCT. RTE. 89	420	4700	4000	360	3500	2700
2	299	SHA		91.08	GLENBURN/DANA ROADS	360	3500	2700	320	3650	3150
2	299	SHA		91.56	FALL RIVER MILLS, MAIN STREET	320	3650	3150	470	5200	4150
2	299	SHA		95.24	MCARTHUR-GLENBURN RD	380	3900	3600	350	1950	1700
2	299	SHA		96.78	PITTVILLE ROAD	350	1950	1700	130	1300	1200
2	299	SHA		99.361	SHASTA/LASSEN COUNTY LINE	130	1300	1200			
2	299	LAS		0	SHASTA/LASSEN COUNTY LINE				130	1300	1200
2	299	LAS		10.407	CEMETERY ROAD	130	1300	1200	130	1300	1200
2	299	LAS		15.101	LOOKOUT ROAD	190	2150	1700	100	1200	930
2	299	LAS		25.635	LASSEN/MODOC COUNTY LINE	100	1000	900			
2	299	MOD		0	LASSEN/MODOC COUNTY LINE				100	1000	900
2	299	MOD		0.332	ADIN, JCT. RTE. 139, SOUTH	100	1000	900	150	1700	1350
2	299	MOD		21.749	JCT. RTE. 139 NORTH	120	1150	830	170	1950	1300
2	299	MOD		22.435	CANBY RANGER STA LT	170	1950	1300	140	1800	1300
2	299	MOD		40.276	ALTURAS, JUNIPER STREET	140	1800	1300	330	3050	2450
2	299	MOD		40.64	ALTURAS, JCT. RTE. 395	420	4550	3950	100	880	720
2	299	MOD		57.354	LAKE CITY ROAD	90	800	660	50	360	290
2	299	MOD		66.632	NEVADA STATE LINE	10	100	60			
8	330	SBD	R	28.696	JCT. RTE. 210				1300	10800	9000
8	330	SBD		44.118	RUNNING SPRINGS, JCT. RTE. 18	1400	12000	10000			
8	371	RIV	R	56.467	JCT. RTE. 79				610	6400	6200
8	371	RIV		60.23	WILSON VALLEY ROAD	730	7300	7000	770	7700	7400
8	371	RIV		67.657	CARY ROAD	730	7500	7200	730	7500	7200
8	371	RIV		71.31	ANZA, CONTRERAS ROAD	700	7200	6950	700	7200	6950

Exhibit 3 - Fountain Wind Project - Estimated Vehicle Trips

Vehicles	Number of Trucks	Estimated Gross Vehicle Weight (Pounds)	Load Weight (Pounds)	Notes/ Assumptions
Pick-Up Trucks				
Survey	400	7,000	500	
Construction Trades	24,000	7,000	500	Average number of crews (30)
Project Management Staff	2,500	7,000	500	Includes inspectors
Equipment Operators	6,267	7,000	500	
Small Equipment on Flatbed Trailer	1,250	12,000	5,000	
Total Pick-up Truck Trips	34,417	20,650	13,767	Assume 60% SH 299 West, 40% SH 299 East
Peak Number of Pick-up Truck Trips/Day	173	104	69	Assume 60% SH 299 West, 40% SH 299 East
Mobile Home (Field Office)	22	60,000	40,000	1 Field Office Trailer (Project Management) - 40' x 12' 3 Field Office Trailers for Subs - 12- x 36' Triple Wide 1 Field Office Trailer (Material Lab) - 40' x 12' 6 Storage Trailers
Flatbed Semi Tractor Trailer				
Equipment				
Feller Buncher (logging)	2	71,711		Cat 522B
Logging Trucks	8	35,000		Flat-Bed Semi Trailer and Tractor
Bulldozer (medium)	4	57,440		Cat D7
Scraper	2	93,000		Cat 627K
Drum Compactor	4	41,000		Cat CS41B
Skid Steer Loader	4	4,000		Cat 272D2
Road Grader	1	42,647		Cat 12M
Excavator	1	66,250		Cat 326F
Trenching Equipment	4	52,000		Wolfe 7000
Backhoe Loader (includes setting collector system poles)	4	24,000		Cat 415F2
Cable Reel Truck (Includes auger for pole foundations)	2	46,000		Includes manlift basket for rigging poles
Concrete Pump Truck	1	46,000		Schwing 31 XT
Mobile Hydraulic Crane	6	117,235		Grove RT890E
Large Crawler Crane	2	794,000		Terrex Demag CC2800-1
Equipment Operators	47			Includes oiler for crawler crane
Materials				
Erosion and Sediment Control Materials	4	45,000	10,000	Based on perimeter control on one side of road length
Access Road Aggregate	8,555	80,000	40,200	Based on 40 miles of access roads

Exhibit 3 - Fountain Wind Project - Estimated Vehicle Trips

Temporary Laydown Area Aggregate	1,923	80,000	40,200	Based on 18 staging areas totaling 44 acres
Substation Aggregate	218	80,000	40,200	Based on a 5 acre substation
O&M/Field Office Aggregate	218	80,000	40,200	Based on a 5 acre O&M/Field Office Area
Switching Substation Aggregate	655	80,000	40,200	Based on an 15 acre switching substation
Total Aggregate for Compaction Deliveries	11,570	235,099	Tons	Assume all trips on SR 299 east
Substation Rock	328	80,000	40,200	Based on a 3.5 acre substation
Switching Substation Rock	983	80,000	40,200	Based on an 11 acre battery storage system
Total Aggregate Deliveries	12,881	235,154	Tons	Assume all trips on SR 299 east
Wind Turbine Tower Base	100		153,400	Based on GE 3.4 137, HH 110m
Wind Turbine Tower Lower Mid-Section	100		120,100	Based on GE 3.4 137, HH 110m
Wind Turbine Tower Upper Mid-Section	100		112,850	Based on GE 3.4 137, HH 110m
Wind Turbine Tower Top Section	100		86,900	Based on GE 3.4 137, HH 110m
Wind Turbine Nacelle	100		150,700	Based on GE 3.4 137
Wind Turbine Hub	100		88,050	Based on GE 3.4 137
Wind Turbine Blades (3)	300		37,750	Based on GE 3.4 137
Wire and Cable - Underground Colletion System	37	80,000	45,000	Based on 3 conductors, 1.9 pounds/foot
Wire and Cable - Overhead Collection System	12	80,000	45,000	Based on 3 conductors, 2.1 pounds/foot
Overhead Collection Line Poles	85	30,000	15,000	Assume 250' wire span, 4 - 2000 pound Poles per trailer
Transformers	100	80,000	45,000	Based on 3.5 MW transformer
Miscellaneous Turbine Components	400	80,000	45,000	Based on 4 miscellaneou deliveries per turbine
Formwork	4	80,000	45,000	Based on 25 reuses of forms
Reinforcing Steel (Rebar)	200	80,000	45,000	Based on 45 tons per turbine
Total Turbine Related Deliveries	1,815			Assume all trips on SR 299 west - Schedule to avoid peak hours
Concrete for Turbine Foundations	5,000	69,000	40,000	
Concrete for Substation Foundations	41	69,000	40,000	Based on 2 MPT - Foundation 8'-6" x 24'-0" x 1'-4"
Concrete for Switching Station Foundations	41	69,000	40,000	Based on 40' container each with 6 foundation pies
Concrete for Overhead Collection System Pole Foundations	50	40,332	11,332	Assume 1 concrete foundations (terminations & angles)
Concrete for Transformer Pads	100	41,180	12,180	Assume Pad 9' x 9' x 1'
Concrete for O&M Building	12	69,000	40,000	Based on foundation wall 78' x 70' x 1' thick x 5' deep plus 4" floor
Total Concrete Deliveries	5,244	51,379	CuYds	Assume all trips on SR 299 west
Building Materials	20	80,000	45,000	Based on 5460 square foot prefabricated metal building
Structural Steel - Substation	4	80,000	45,000	Based on 200,000 Pounds of Structural Steel
Structural Steel - Switching Substation	4	80,000	45,000	Based on 200,000 Pounds of Structural Steel
Elecrical Equipment - Substation	10	80,000	45,000	Includes Control Building, switch gear, capacitors, etc.
Elecrical Equipment - Switchingsubstation	10	80,000	45,000	Includes Control Building, switch gear, capacitors, etc.

Exhibit 3 - Fountain Wind Project - Estimated Vehicle Trips

CMP Culverts		4	80,000	45,000	Culvert Extensions and new culverts
Chain Link Fence		7	80,000	45,000	Based on 30,600 linear feet of fence at 10.65 pounds/ ft
Micellaneous Consumables		26	60,000	20,000	
Plant Stock, Seed and Mulch		17	52,600	12,800	Based on 2.5 tons/acre
	Total Miscellaneous Deliveries	102			Assume all trips on SR 299 west
Water (Compaction)		1,175	59,000	33,400	Based on 20 gallons/ton of aggregate (Roads, Laydown, etc.)
Water (Dust Control)		2,754	59,000	33,400	Based on 300 gallons/acre/day of Road, staging, and field office are
Water (Vegetation establishment)		110	59,000	33,400	Based on 10,000 gallons/acre of Laydown areas
	Total Water	4,039	16,159,097	Gallons	Assume all trips on SR 299 east
Fuel Deliveries		50	26,000	7,000	Based on 1000 Gallons/week ea. of diesel on-road & off road
Sanitation		52	50,000	10,000	Based on weekly maintenance visits
Total Material Deliverty Trucks (East)		28,490			Assume all trips on SR 299 west
Total Material Deliverty Trucks (West)		7,289			
Average Material Deliverty Trucks/Day (East-West)		124	32	230	Assumed Days of Deliveries
Lowboy Delivery Vehicle (Additional Axles)					
Equipment		Number (Delivery and Removal)			
Feller Buncher (logging)		4			
Bulldozer (medium)		8	90,000	57,440	
Scraper		4			
Drum Compactor		8	80,000	41,000	
Skid Steer Loader		8	19,000	4,000	
Road Grader		2			
Excavator		2			
Trenching Equipment		8	90,000	52,000	
Backhoe Loader (includes setting collector system poles)		8	49,000	24,000	
Cable Reel Truck (Includes auger for pole foundations)		4			
Concrete Pump Truck		2			
Mobile Hydraulic Crane		24	63,600	28,600	
Large Crawler Crane		40			
	Total Number of Equipment Delivery Trips	118			Trips concentrated at beginning and end (SR 299 West)
Oversize/Over Weight Materials					
Main Power Transformer (SR 299 West)		2	200,000	125,000	13 Axle Vehicle - 2 - 175 MVA Transformers
Total Number of Project Trips (each way)		70,338			

Exhibit 3 - Fountain Wind Project - Estimated Vehicle Trips

Approximate peak hour daily trips (one-way)	197	
Approximate peak hour daily trips on SR 299 West (one-way)	112	Higher Commuting Trips in Peak Hour
Approximate peak hour daily trips on SR 299 East (one-way)	85	
Approximate Average Daily Traffic (ADT)		
Approximate peak number of daily trips on SR 299	658	
Approximate peak number of daily trips on SR 299 (West)	271	
Approximate peak number of daily trips on SR 299 (East)	386	Higher Aggregate and Water Deliveries throughout the day