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City of Riverside
Zero-Emission Fleet Transition Plan

City Council Meeting

October 23, 2024

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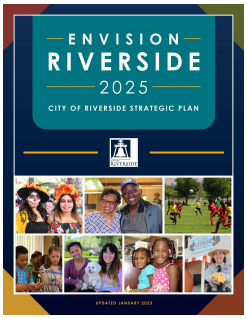
OVERVIEW: FLEET TRANSITION PLAN

The Fleet Transition Plan is designed to support the City's sustainability objectives while meeting its diverse services operational requirements and regulatory compliance.



DRIVING RESULTS FOR SUSTAINABILITY OBJECTIVES

- ✓ Envision Riverside 2025 Strategic Plan elevates *environmental stewardship* as a top priority
- ✓ Measure SR-12: Electric Vehicle Plan and Infrastructure
- ✓ Measure T-19: Alternative Fuel & Vehicle Technology and Infrastructure

DELIVERING DIVERSE SERVICES OPERATIONAL REQUIREMENTS

- ✓ *Full-service* including electric and water utilities, refuse, police, and fire
- ✓ Vehicles with relatively *low-mileage drive cycles*
- ✓ *Large and diverse fleet* in terms of fuels, vehicle configurations, and parking locations

CALIFORNIA AIR RESOURCES BOARD

MAINTAINING COMPLIANCE WITH EXISTING AND NEW REGULATIONS

- ✓ *Advanced Clean Fleet (ACF)* phases out medium-to-heavy duty conventional vehicles towards zero-emission technologies.
- ✓ *Innovative Clean Transit (ICT)* requires that all public transit agencies transition vehicles to a 100% ZEV fleet by 2040.
- ✓ *Advanced Clean Cars II rule (ACC Rule II)* requires that 100% of passenger vehicle sales are ZEV beginning 2035.

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OVERVIEW: FLEET TRANSITION PLAN

The Fleet Transition Plan provides the City with a foundational strategy to guide the transition towards zero-emission vehicles and to begin the next phases required for implementation.

1. **DEVELOPED A VEHICLE REPLACEMENT & COMPLIANCE APPROACH**
   Plan to replace ***308 vehicles*** (248 EVs and 60 ICE), leading to a ***35% electric fleet composition*** by 2040 to comply with ACF, ICT, and ACC Rule II

2. **IDENTIFIED CHARGING & FACILITY INFRASTRUCTURE NEEDS**
   Vehicle charging infrastructure include ***127 chargers*** and facility electrical upgrades for *6,450-kW in increased electric load*

3. **ESTIMATED TOTAL FLEET COSTS OF OWNERSHIP, EMISSION REDUCTIONS, & FUNDING OPPORTUNITIES**
   Fleet operating costs estimated at ***$210M*** *(9% reduction versus a No ZEV Procurement Scenario)* over the 17-year period with total reduction in scope 1 and 2 emissions of ***21,495 MTCO2e*** at a cost to the City of **$3,411** per MTCO2e reduced

4. **PROVIDED INFRASTRUCTURE DEPLOYMENT TIMELINE OPTIONS**
   Two timeline options for infrastructure deployment in three-phases by either accelerating deployment for an estimated *upfront cost of $1.14M (Scenario 1)* v. leveraging off-site charging at a cost of $32k to delay City Hall and Utility POE (*Scenario 2*)

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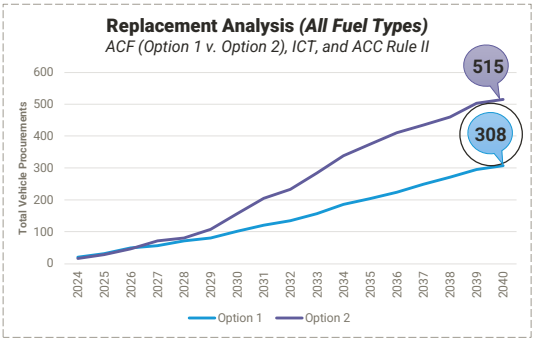
City selected to comply with the ACF Option 1 replacement schedule to drive the fleet transition per its procurement policy and avoid vehicle purchases prior to end of useful life.

CARB ACF COMPLIANCE PATHWAYS

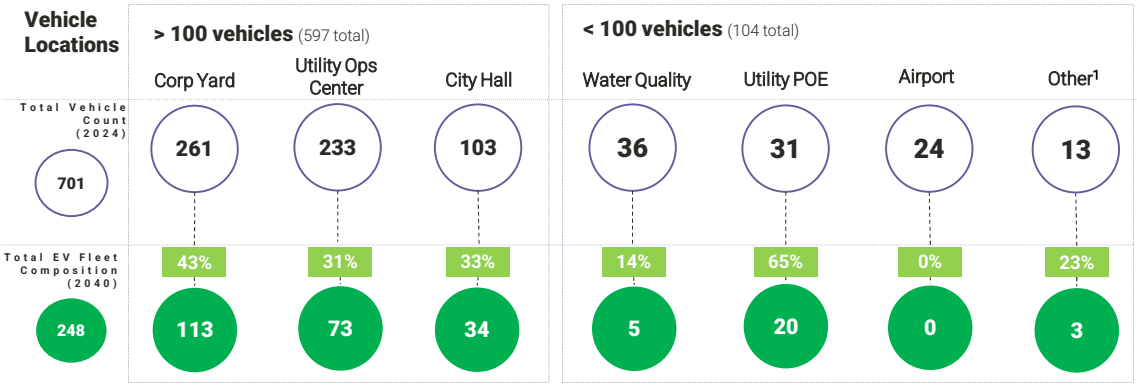


CITY'S SELECTED COMPLIANCE PATHWAYS

CARB ACF[1]	*Option 1 Replacement Schedule (Selected):* From 2024 to 2026, 50% of vehicles purchased are ZEVs. Starting in 2027, 100% must be ZEVs. *Option 2 Replacement Schedule:* Requires that a specific share of the fleet (grouped in three categories by vehicle types) are transitioned to ZEVs each year.
ICT[2]	Starting in 2026, 25% of new buses (>14,000 lbs. Gross Vehicle Weight Rating (GVWR)) are to be ZEVs and starting in 2029, 100% will be ZEVs.
ACC RULE II[3]	From 2026 to 2034, transition 50% of passenger vehicles to EV's. Starting in 2035, 100% will be ZEVs

Notes:
1. CARB ACF: Van, Refuse Truck, Street Sweeper, MD Utility Service, MD Bucket Truck, HD Utility Service, Dump Truck, Flatbed Truck, Work Pickup Truck, Semi-Truck, HD Bucket Truck
2. ICT: Paratransit Bus
3. ACC Rule II: Passenger vehicles (Sedan, SUV, and Light-Duty Pickup Truck)
4. Vehicle types with no ZEV Alternatives (apply for exemption): Vacuum Truck, Tank Truck, Construction Truck, Paint Stripper
5. Exempt from applicable regulations: HD Crane and F-550 w/Fire Apparatus

By 2040, vehicle replacements include 308 vehicles (248 EVs and 60 ICE) resulting in a gradual growth of the fleet to be 35% electric to meet all regulatory requirements.



Notes:
1. Total vehicle replacements by regulatory requirements: ACF (166 w/140 EV), ICT (34 w/34 EVs), ACC Rule II (108 w/74 EV's).
2. Category includes the number of vehicles that are stored at the following locations: Home (9), Public Utility Energy (1), Library (1), Payton Ave (1), Dalton Ave (1).

2 CHARGING & FACILITY INFRASTRUCTURE NEEDS

By 2040, EV additions to the fleet will result in a projected increase of 6,450-kW in electric demand to be served by 127 chargers across five sites.

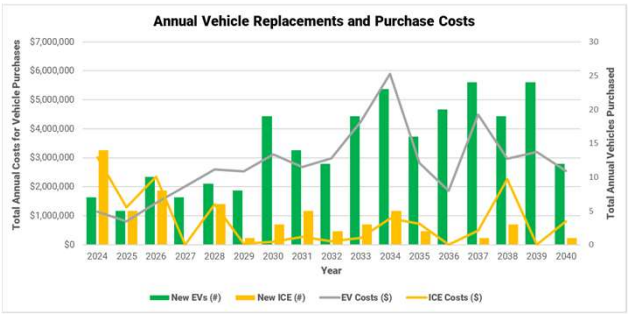
	CORP YARD	UOC	CITY HALL	POE	WATER QUALITY
EV Load Addition	3174 kW	2434 kW	450 kW	272 kW	120 kW
Future EV Fleet (2040)	116	73	34	20	5
Number of Chargers					
Charger Type & Output: 7.2kW Single-Port	2	2	18	10	
40kW Dual-Port	37	23	8	5	3
120kW Dual-Port		13			
300kW Cabinet (8 Ports)	6				
Total Number of Chargers	45	38	26	15	3

3 TOTAL COSTS OF OWNERSHIP

Through 2040, the City is estimated to incur ~$61.34M in vehicle purchase costs (before incentives) for replacements that align operational needs and regulatory requirements.

TOTAL VEHICLE COSTS[1] & REPLACEMENT COUNT

		EV	ICE
CARB ACF[2]	$51.20M	(140)	(26)
ICT[3]	$5.05M	(34)	(0)
ACC RULE II[4]	$5.09M	(74)	(34)

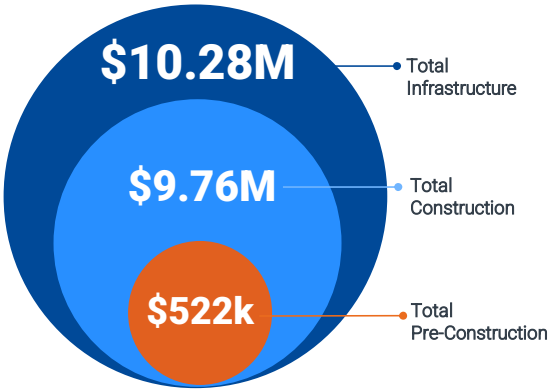


Notes:
1. EV incentives and rebates are excluded (Total: $3.2M). They are, however, assumed to be obtained by the City in the final total cost of ownership estimation.
2. CARB ACF: Costs include $38.9M (140 EVs) and $12.3M (26 ICE)
3. ICT: Costs include $5.05M for (34 EVs) transit buses
4. ACC RULE II: Costs include $3.4m (74 EVs) and $1.7M (34 ICE)

3 TOTAL COSTS OF OWNERSHIP

Through 2040, the City is estimated to incur ~$10.28M in charging infrastructure and facility upgrade costs to support the future state of its electric fleet composition.

TOTAL INFRASTRUCTURE COSTS[1]



BY SITE

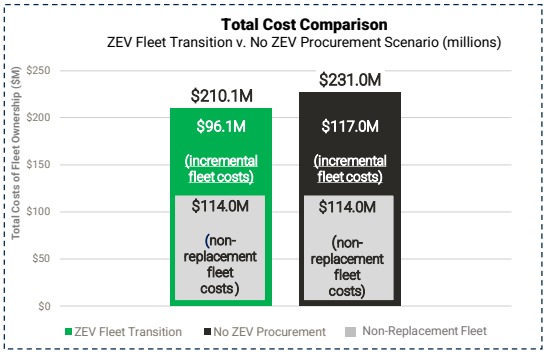
CORP YARD	$5.16M	$1,582 per kW
UOC	$3.09M	$1,270 per kW
CITY HALL	$1.02M	$2,347 per kW
POE	$679k	$2,496 per kW
WATER QUALITY	$328k	$2,733 per kW

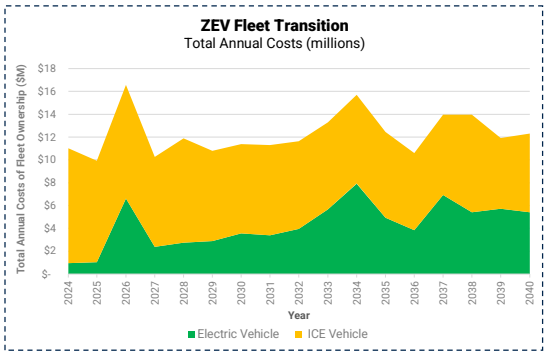
Notes:
1. Infrastructure costs are at a Class 5 Level estimate: -30%/+50%

3 TOTAL COSTS OF OWNERSHIP

The Fleet Transition Plan is estimated to cost $210.1M, a $21M (9%) cost savings versus a status-quo scenario with no ZEV procurement.

Cost savings are derived primarily from three factors, including: EVs having maintenance costs 40% to 60% lower than ICE vehicles, forecasted declines in costs to EV batteries and powertrain, and increases in costs for ICE purchases and fuel (gasoline and diesel).



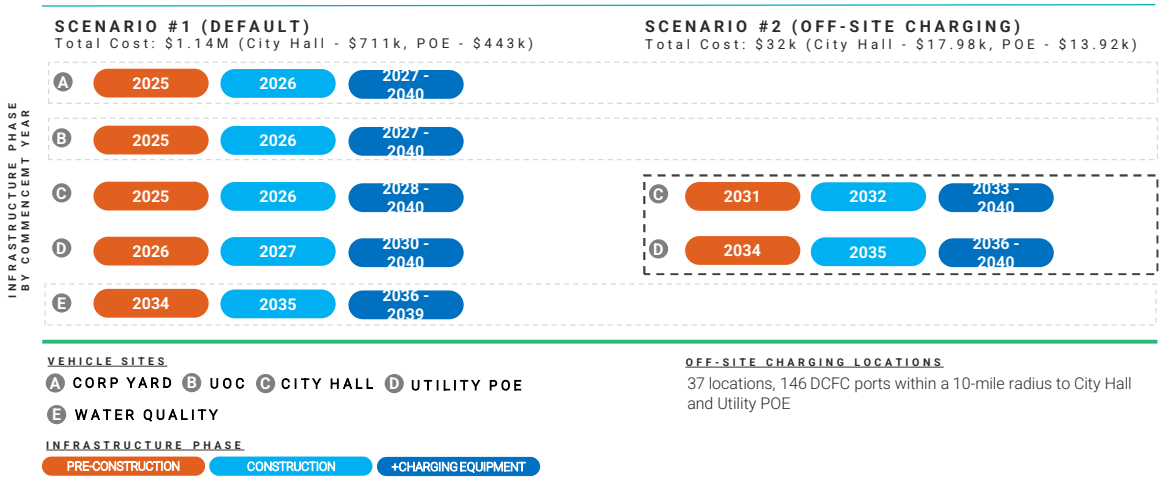


Notes:
1. $96.1M in *incremental fleet costs (ZEV Fleet Transition)* includes vehicle purchase ($61.34M), infrastructure ($10.28M), vehicle O&M ($27.68M), minus rebates ($3.20M)
2. $117M in *incremental fleet costs (No ZEV Procurement)* includes vehicle purchase ($63.70M) and vehicle O&M ($53.30M)
3. $114M in *non-replacement fleet costs* are for O&M of vehicles in the fleet that are not scheduled to be replaced or transitioned during the study period
4. EV incentives and rebates include $2.30M for CARB-ACF regulated vehicles and $916.50k for ICT, ACC Rule, and Exempt vehicles

4 DEPLOYMENT TIMELINES

Scenario 1 accelerates infrastructure deployment with upfront costs of $1.14M v. Scenario 2 that delays City Hall and Utility POE by leveraging off-site charging at a cost of $32k

Both scenarios envision charging equipment (47% of total infrastructure costs) to be installed on a "just-in-time" basis (i.e., add chargers in alignment with EV additions). In scenario 2, the deployment delay is enabled by the relatively low # of EVs that are planned over the first half of the transition period for City Hall (10 EVs, from 2024 to 2031) and Utility POE (5 EVs, from 2026 to 2034).



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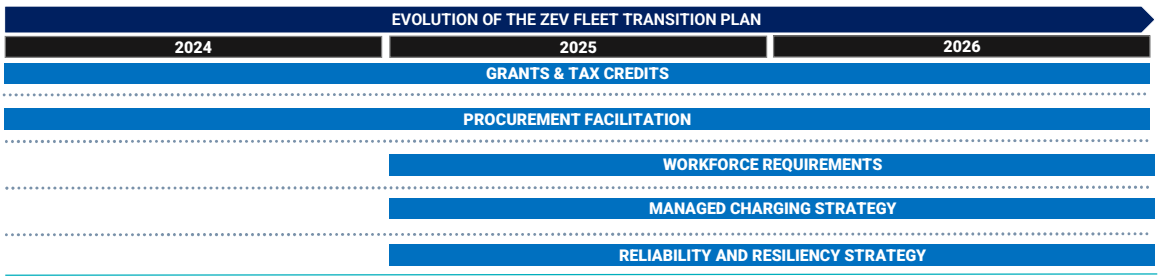
B NEXT STEPS – 2024

Evolution of the City's Fleet Transition Plan – Immediate Next Steps



FOCUS AREA	KEY NEXT STEPS
	2024
Grants & Tax Credits	Develop grant application to obtain financing through the state funded *EnergIIZE* program.
	Leverage federal tax credits (*Commercial Clean Vehicle*) and state reimbursement grants *(HVIP)* for vehicle purchases.
	Monitor the expected release of the next round of funding for the federal *Clean Heavy-Duty Vehicles* and state funded *Charging Infrastructure for Government Fleets* programs.
Procurement	Procure vehicles that are scheduled to be replaced in 2024.
	Define vehicle, charging functionalities, and site development requirements to support development of an RFP for engineering, procurement, and construction (EPC) of sites included in the first phase of deployment (i.e., *Scenario 1* - Corp Yard, UOC, and City Hall or *Scenario 2* – Corp Yard and UOC).

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STRATEGIC PLAN ALIGNMENT

Environmental Stewardship

Goal 4.6: Implement the requisite measures to achieve citywide carbon neutrality no later than 2040.

Cross-Cutting Threads

RECOMMENDATIONS

That the City Council receive and file the Zero-Emission Fleet Transition Plan developed by Black & Veatch Corporation.

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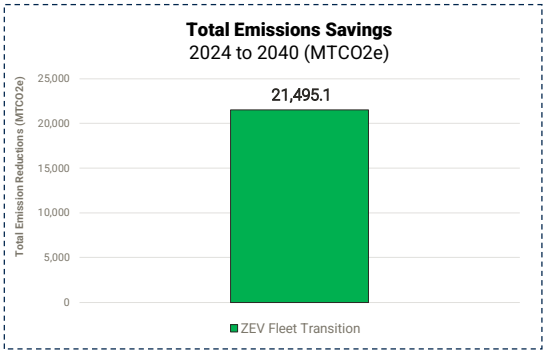
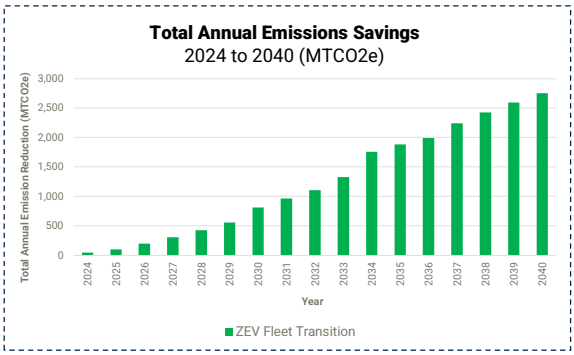
APPENDIX

Through 2040, the growth of the electric fleet will result in an estimated total scope 1 and 2 emission reductions of 21,495.1MTCO2e at a cost to the City of $3,411 per MTCO2e reduced.

Total emissions reductions include scope 1 (i.e., tailpipe emissions) and scope 2 (derived from RPU as power generation source).





Notes:
1. ICE vehicle emissions include tailpipe emissions only (combustion of Gas and CNG)
2. EV "emissions" includes GHG emissions intensity of energy from the grid used to charge EV
3. Electricity emissions factors forecasted per RPU provided *Annual emission factors for electricity used for EV charging* from RPU Integrated Resource Plan)

FUNDING OPPORTUNITIES

There are six high-priority federal and state funding opportunities for funding the Fleet Transition Plan, including tax credits, competitive, and reimbursement grants / vouchers

Federal Funding:

A **Federal Tax Credits** (2 programs)

Tax credits ranging between ***30% to 40% to offset vehicle costs*** (Commercial Clean Vehicle and Alternative) and charging infrastructure (Alternative Fuel Vehicle Refueling Property Credit).

B **Clean Heavy-Duty Vehicles Grant Program**

Competitive grants for up to $60M to replace existing heavy-duty vehicles with zero-emission vehicles and infrastructure, and to train and develop workers to support the fleet.

State Funding:

C **Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project**

Reimbursement vouchers ranging from $20k to $240k to cover vehicle purchases from a certified dealer.

D **EnergIIZE Commercial Vehicles**

Reimbursement grants ranging between 50% to 70% of equipment costs to incentivize deployment of zero-emission vehicle technology.

E **Charging Infrastructure for Government Fleets**

Competitive grants ranging from $500k to $6M, or up to 70% of project costs, to fund charging infrastructure for municipalities. Pending release of next round of funding.

Notes:
1. Funding opportunities prioritized based on funding eligibility, magnitude, mechanism, availability, application and administrative burden.
2. Black & Veatch reviewed 32 opportunities (Federal – 8 , State – 22, Utility – 2) leading to a selection of six high-priority opportunities (Federal – 3, State – 3)

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NEXT STEPS – 2025

Evolution of the City's Fleet Transition Plan (2025)

FOCUS AREA	KEY NEXT STEPS
	2025
Grants & Tax Credits	Continue to monitor and update availability of funding opportunities.
	Continue to develop grant applications and leverage available tax credits, including the Alternative Fuel Vehicle Refueling to support financing infrastructure costs that are anticipated to be incurred in 2025.
Procurement	Procure vehicles that are scheduled to be replaced in 2025.
	Release and award EPC RFP for the first phase of infrastructure deployment.
	Prepare EPC RFP for second phase of deployment (i.e., *Scenario 1* – Utility POE, *Scenario 2* – NA).
Workforce	Perform skills gap analysis and develop training program strategy, partners, resources, and estimated costs to design a comprehensive workforce development strategy.
Managed Charging	Evaluate and develop managed charging strategies for fleet and electric load optimization.
Reliability & Resiliency	Develop a city-wide reliability and resiliency plan in collaboration with Riverside Public Utilities, community, and key stakeholders.

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NEXT STEPS – 2026

Evolution of the City's Fleet Transition Plan (2026)

FOCUS AREA	KEY NEXT STEPS
	2026
Grants & Tax Credits	Continue to monitor and update availability of funding opportunities.
	Continue to develop grant applications and leverage available tax credits.
Procurement	Procure vehicles that are scheduled to be replaced in 2026.
	Release and award EPC RFP for the second phase of infrastructure deployment (i.e., *Scenario 1* – Utility POE, *Scenario 2* – NA).
Workforce	Begin implementation of the workforce development strategy to support the new EVs and related infrastructure that is scheduled to be completed this year.
Managed Charging	Begin to implement, monitor, and update managed charging strategy.
Reliability & Resiliency	Begin implementation of the city-wide reliability and resiliency plan.

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Performance Disclosure

In conducting our analysis and in forming an opinion of the projection of future operations summarized in this report, B&V has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. This methodology utilized by B&V in performing the analysis follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are reasonable and appropriate for the purpose for which they are used; however, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur. Such factors may include, but are not limited to, the ability to execute the capital improvement program as scheduled and within budget, regional climate and weather conditions affecting demand and supply, and adverse legislative and regulatory actions, or legal decisions (including but not limited to environmental law and regulations) affecting the ability of B&V's client to operate its system. Readers of this report are advised that any projected or forecasted financial, operating, performance, or strategy merely reflects the reasonable judgment of B&V at the time of the preparation of such information and is based on a number of factors and circumstances beyond B&V's control. Accordingly, no assurances are made that the projections or forecasts will be consistent with actual results or performances. Use of this report will constitute agreement by the user that (i) there is no warranty, express or implied, in this report, (ii) the user accepts the sole risk of any such use, and (iii) the user waives any claim for damages of any kind against B&V.