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October 8, 2013

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Re: Response to CalPilots Comments Regarding Russell City Energy Center

Dear Ms. Hargleroad:

This letter is in response to your comments from the August 9, 2013, meeting with California Energy Commission (Energy Commission) staff, and your subsequent August and September, 2013 emails regarding California Pilots Association (CPA) concerns with the Russell City Energy Center (RCEC). Staff has analyzed the concerns and provides responses below.

Issue No. 1 – You assert that pilots will not be able to comply with the recommendation to avoid over flight of the RCEC at less than 1,000 feet, as advised by Condition of Certification TRANS-10 in the Energy Commission 2007 Decision on the RCEC Amendment No.1, because a plane over 800 feet would penetrate Metropolitan Oakland International Airport (Oakland Airport) airspace and risk collisions with large aircraft on approach to the Oakland Airport.

Hayward Executive Airport (Hayward Airport) airspace has a ceiling, up to, but not including, 1,500 feet above the airport elevation (City of Hayward 2011). A pilot could fly over the RCEC at 1,000 feet or higher and still be within Hayward Airport airspace and would not interfere with aircraft approaching Oakland Airport. Aircraft approaching Oakland Runway 29 fly about 0.8 miles north of the RCEC at approximately 2,500 feet mean sea level (MSL) [AirNav.Com 2013b].

Pursuant to Condition of Certification **TRANS-10**, the project owner requested the Federal Aviation Administration (FAA) make changes to local navigational charts and publications by noting the location of the RCEC and advising pilots to avoid low-altitude over flight of the power plant. The FAA acted on these requests by changing the charts and publications as follows:

- The AirNav.Com information for Hayward Airport now includes a remark which states "155 foot energy complex exhaust stack 1 1/2 nautical miles (NM) southwest of airport. Do not overfly energy complex facility below 1,000 feet MSL" (AirNav.Com 2013a].
- The FAA Airport/Facility Directory (AFD) Southwest U.S. now contains a remark for the Hayward Airport noting a "155 foot energy complex exhaust stack 1.5 NM

southwest of airport. Do not overfly energy complex facility below 1,000 feet MSL" (FAA 2013b).

- Lastly, the FAA San Francisco VFR Terminal Area Chart now has a mark depicting the RCEC next to the words "power plant" about 1.5 miles southwest of the Hayward Airport (FAA 2013a).

Issue No 2 – You assert that if planes are directed around the RCEC to the Hayward Shoreline area, there will be bird strikes.

The remarks noted in Issue No.1 above do not direct planes to the Hayward Shoreline area, but advise pilots to avoid over flight of the energy facility below 1,000 feet MSL. Pilots can avoid flying over the RCEC without flying over the Hayward Shoreline. The AirNav.Com information for Hayward Airport and the FAA AFD identified above also have remarks noting that "flocks of birds feeding along the shoreline, creek areas and at the golf course to the north, on occasion, may fly across various parts of the (Hayward) airport." Pilots are advised to watch for flocks of birds and maintain appropriate separation to avoid midair collisions.

Issue No. 3 - You assert that the Energy Commission should model the RCEC plumes using the September 2012 MITRE Corporation's Center for Advanced Aviation System Development (CAASD) model.

Staff is unable to utilize the MITRE model because it is not currently available. The FAA is not willing to release a beta version under a confidentiality agreement for Energy Commission use. An FAA representative indicated that continuing with the Spillane methodology for estimating plume velocities is not unreasonable in the absence of an FAA recommended approach (CEC 2013).

The MITRE study titled *Expanded Model for Determining the Effects of Vertical Plumes on Aviation Safety* found that while a vast majority of environmental conditions create hazards for aircraft under about 600 feet above the stack, there are a few cases where the hazardous region extends to much higher elevations above the stack. It was shown that various weather conditions could cause the highest velocities with the largest risk contributed by calm winds, low temperatures, and neutral or unstable stratification of the atmosphere. During these identified weather conditions, it is recommended that procedures are adjusted, or the landing runway is changed, as needed, to avoid this hazardous airspace. In general, as the exhaust velocity, stack diameter, and the temperature increase, the area of risk associated with the plume increases as well (MITRE 2012). The MITRE study introduced a Graphical User Interface (GUI) that incorporates exhaust plume behavior and velocity using the Spillane model and representative meteorological data to assess turbulence, roll response, and probability of risk, on specific aircraft. The GUI is still under review by the FAA and has not been released for public use (CEC 2013).

Even though the MITRE study is not available for use by Energy Commission staff, the findings identified in the 2006 FAA study titled "Safety Risk Analysis of Aircraft

Overflight of Industrial Exhaust Plumes" are similar to the Energy Commission staff findings using the Spillane model during the RCEC Amendment No. 1 proceeding. In its October 2007 Decision on the RCEC Amendment No. 1, the Energy Commission concluded that the operation of the RCEC would not be a significant risk to aviation safety. This was based on the 2006 FAA study that concluded that the risk to aircraft would be extremely remote – one in a billion—at best, and well within the FAA's acceptable range of risk (FAA 2006).

The Decision also noted that the FAA did not comment about any potential loss of navigable airspace, but did include Condition of Certification **TRANS-10** to discourage pilots from flying over, or within close proximity, to the RCEC. This condition resulted in the FAA changes in navigational charts and documents as noted above, with the recommendation to avoid over flight of the site below 1,000 feet, and the installation of obstruction lighting and marking on each RCEC exhaust stack and cooling tower, as well as at each corner of the facility fence line that would be visible to an aircraft in flight (CEC 2007b). Staff recently inspected the RCEC facility and confirmed installation of the obstruction lighting and markings. The new over flight procedures are consistent with the recommendation in the MITRE study that recommended procedures be adjusted to reduce the risk of hazards from high velocity plumes on low flying aircraft.

Issue No. 4 – You assert that the FAA's new expanded circle-to-land approach procedures will have a negative impact on aircraft using Hayward Airport.

The FAA's new expanded circle-to-land approach procedures will not have a negative impact on aircraft using Hayward Airport. The FAA has recently begun to publish new instrument approach procedures that use larger circling approach airspace dimensions, which would allow jet aircraft more airspace within the circle-to-land approach to reduce speed and altitude. A circling maneuver can be used when a straight-in instrument approach cannot be done. An aircraft on a circling approach speed less than 90 knots would have a protected airspace radius of 1.3 miles from the desired runway, which is the same as the older approach procedures. This approach would apply to about 91 percent of the aircraft based at Hayward Airport, which are one or multi-engine piston (propeller) aircraft (Alameda County 2012). However, these aircraft could be considerably closer to the runway when executing the circle-to-land approach or while flying touch-and-go (T&G) maneuvers. In either case, they would not be flying over the RCEC.

Approximately 7 percent of the aircraft are jet aircraft, which would use a circling approach speed of 90 to 120 knots. The radius of the protected airspace for this approach would increase from 1.5 to 1.7 miles, which is just west of the RCEC. Pilots could adjust their flight path to avoid over-flying the power plant or remain above 1,000 feet MSL while passing over it. The remaining 2 percent of aircraft are helicopters, which operate out of two helipads; one north of the Hayward Airport runways (H2) and one south (H1). Helicopters using H2 arrive and depart from/to the north. Those using H1, including all helicopter training traffic, are kept southeast of the Hayward Airport, over the industrial area, at or below 500 feet MSL. Helicopter flight tracks show arrivals and departures are east of the RCEC, except for those doing T&G maneuvers on the

main runway (10Right/28 Left) that remain within 3,500 feet of the airport (City of Hayward 2011). Therefore, the helicopters would not fly near the RCEC.

Issue No. 5 – You assert that the RCEC is violating the San Francisco Bay Plan under the federal Coastal Zone Management Act.

The RCEC is not violating the San Francisco Bay Area Plan under the federal Coastal Zone Management Act. In the 2007 Energy Commission Decision on the RCEC Amendment No. 1, the land use portion of the Decision noted that the new project site is designated Industrial Corridor in the City of Hayward General Plan and is zoned industrial, which are the same designations for the original project site. The June 2002 Final Staff Assessment Land Use analysis of the original project, noted that the Bay Conservation and Development Commission (BCDC) administers the local coastal management program in the San Francisco Bay Plan pursuant to the federal Coastal Zone Management Act. The Bay Plan regulates filling and dredging in the Bay and new development within 100 feet of the shoreline, and seeks to protect shoreline areas suitable for high priority water-oriented uses (i.e., ports and harbors). Both the original and alternative project sites are not located within 100 feet of the shoreline and do not lie within the BCDC jurisdiction.

Issue No. 6 – You assert that visible plumes from the RCEC could cause pilots to lose sight of the Hayward Airport or would be unable to locate the power plant through the plume.

Any visible plumes from the RCEC would not cause pilots to lose sight of the Hayward Airport or make them unable to locate the power plant through the plume. In the 2007 Energy Commission Staff Assessment on the RCEC Amendment No. 1, the Visual Resources analysis predicted the visible plumes from the heat recovery steam generator stacks (HRSG) would only occur 1.91 percent of all hours and the cooling towers would be plume-abated. Energy Commission staff's Visual Resources analysis in the original 2001-2002 RCEC proceeding found that an abated cooling tower plume would be visible 0.52 percent of all hours (CEC 2002). The low frequency HRSG and cooling tower plumes would occur 1.5 miles southwest of the Hayward Airport. Pilot's views of the airport would not be affected nor would they be unable to locate the power plant. Given the warnings about the exhaust stacks noted above and the fact that 91 percent of the aircraft using the Hayward Airport are propeller driven aircraft that could fly considerably closer to the Hayward Airport, the RCEC's visible plumes would not have a significant impact on aviation operations.

Issue No. 7 – You assert that RCEC violates FAA Grant Assurances and the City of Hayward Laws, Ordinances, Regulations, and Standards (LORS).

The presence of the RCEC would not affect the process of getting funds from the FAA for airport improvements. Grant assurances (obligations) require recipients (Hayward Airport or Alameda County) of funds from the FAA to maintain and operate their facilities safely and efficiently and in accordance with specified conditions.

Staff has reviewed the statement by CPA in its August 21, 2013, letter claiming that thermal plumes from RCEC will cause the city of Hayward to be in violation of FAA Grant Assurances. The declaration states that RCEC thermal plumes are not compatible with normal airport operations for the Hayward Airport and would be incompatible with grant assurance contracts executed by the city of Hayward to "protect instrument and visual operations to the airport" and to "restrict the use of land adjacent to, or in the immediate vicinity of, the airport, to activities and purposes compatible with normal airport operations" (CPA 2007). As noted earlier, the October 2007 Energy Commission Decision on the RCEC concluded that the operation of the RCEC would not be a significant risk to aviation safety, but did include Condition of Certification **TRANS-10** to discourage pilots from flying over, or in proximity to, the RCEC below 1,000 feet.

Grant assurances were not addressed in the Hayward Executive Airport Land Use Compatibility Plan or the Airport Layout Plan Update noted earlier. The Update document does discuss the FAA's Airport Improvement Program (AIP) as one of the funding sources for improvements at the Hayward Airport. The AIP provides a maximum federal share of 90 percent for all eligible projects. There is no discussion of how the RCEC could impact securing these funds (City of Hayward 2012). Staff contacted the Hayward Executive Airport Manager who said, in his opinion; the presence of the RCEC would not affect the process of getting funds from the FAA for airport improvements (City of Hayward 2013).

The RCEC is about 1.5 miles southwest of the Hayward Airport in an area that experiences insignificant air traffic over flight. Staff used flight track data from the Hayward Airport Update Plan to generate attached **Figure 1**. The vast majority of the flight arrival stream to Hayward and Oakland airports is north of the RCEC. Only a small number of departure aircraft from Hayward flew over the area where the project would be located. The flight track data was gathered during a week's worth of operations in July 2008 (City of Hayward 2011). Though the number of aircraft operations would be different when compared to today's air traffic, the arrival and departure streams would be similar. Given the remarks and changes to navigational charts noted earlier and the recent start of commercial operations at the RCEC, it is likely that even fewer aircraft would fly over the project site than occurred in July 2008. Staff concludes, based on historical data and new measures implemented pursuant to Condition of Certification **TRANS-10**, that few aircraft would fly over the RCEC and therefore normal aircraft operations would occur.

In the 2007 Energy Commission Decision on the RCEC Amendment No.1, the land use portion of the Decision concluded the RCEC will not be a hazard to aircraft, even less so with the additional protective measure of a notice to pilots to avoid (low altitude) over flight of its thermal plumes and visible marking lights. The RCEC will also comply with all applicable LORS, including Hayward Municipal Code Sections 10-1.140 (uses permitted) and 10-1.3225.c (public health, safety, or general welfare) [CEC 2007b].

<u>Issue No. 8</u> – You assert that RCEC has violated Condition of Certification VIS-10 by not preparing and implementing an approved off-site landscaping plan.

RCEC is not in violation of Condition of Certification **VIS-10**. In early 2002 during the initial planning stages for the off-site landscaping plan as required by Condition of Certification **VIS-10**, RCEC requested permission from the property owners adjacent to the project site to plant trees on their properties. The trees were meant to screen views of the industrial buildings along the Hayward shoreline and adjacent to the project site to compensate for the visual contrast caused by the RCEC. During April and May of 2002, RCEC received approval letters from the landowners of the properties. Based on the property owners' agreement to allow the plantings, RCEC designed an off-site landscaping plan that included, but was not limited to, the planting of trees on the adjacent properties. The landscaping plan was submitted to East Bay Discharge Authority (EBDA) for comment on April 9, 2010, and to the California Energy Commission on May 12, 2010. Energy Commission staff approved the off-site landscaping plan on June 21, 2010. After receiving approval of the plan in 2010, RCEC initiated implementation of the approved plan by preparing to notify the adjacent landowners that the planting would begin.

RCEC contacted the landowners to inform them of the intent to begin the off-site planting. In September 2012, RCEC discovered that it is not feasible to plant trees in accordance to Condition of Certification **VIS-10** for the following reasons:

- several landowners decided to refuse permission to RCEC to plant trees on their property;
- one landowner would only allow the planting of juniper trees, a species not compatible with adjacent marshlands;
- one landowner would allow a limited number of trees to be planted, as long as they did not block views from his property of the shoreline; and
- several parcels had pipelines running underneath the surface where trees were to be planted raising concerns that tree roots could damage the pipes.

As a result of these limitations, RCEC offered an alternative Condition of Certification **VIS-10** for consideration by Energy Commission staff. RCEC proposed to voluntarily convey to the East Bay Regional Park District (EBRPD) 26 acres of land south of the current project site under their ownership. In addition, the project owner would contribute to an endowment for the long-term maintenance and operation of the land.

On September 20, 2012, RCEC staff met with Energy Commission staff to discuss several matters pertaining to the RCEC. One of the items discussed was Condition of Certification **VIS-10**, and the filing of an amendment to the license issued for the RCEC.

On November 8, 2012, RCEC staff filed a fourth Petition to Amend the Commission Decision for the RCEC to do the following:

- modify Condition of Certification **VIS-2** to allow onsite landscaping to be planted after the start of commercial operation;

- delete Condition of Certification **VIS-9**; and,
- replace Condition of Certification **VIS-10** with an alternative/new Condition of Certification **VIS-10**.

On November 28, 2012, RCEC staff provided Energy Commission staff with a tentative map showing proposed land for consideration in a revised Condition of Certification **VIS-10** for comment.

On January 25, 2013, Energy Commission staff and RCEC staff met at RCEC to review the landscape area identified in Condition of Certification **VIS-10** and other landscape areas under consideration.

On February 13, 2013, the project owner revised their petition for amendment. The revised amendment includes a withdrawal of their requested change to Condition of Certification **VIS-10** that would have resulted in the conveying of 26 acres to EBRPD. In its place, the project owner requests to modify Condition of Certification **VIS-10** to allow off-site enhancements such as landscaping and painting of various commercial buildings, to be completed within one year following commercial operation.

On April 5, 2013, Energy Commission staff published its analysis of the proposed modifications to the Energy Commission's Final Decision for the RCEC.

In a May 7, 2013, letter, I advised Barbara McBride, Director of Environmental Health and Safety for Calpine, that due to RCEC not being able to implement the approved plan, that staff does not consider RCEC to be out of compliance with Condition of Certification **VIS-10**. The letter further stated that a reasonable period of time (no earlier than November 1, 2013) will be provided to revise and implement a new plan.

RCEC has been in discussions with several of the landowners adjacent to the power plant. The majority of the landowners are currently accepting painting to reduce the visual contrast of these buildings as viewed from the Hayward shoreline. RCEC believes that a final resolution regarding the creation and implementation of a revised plan should occur in the next few weeks.

If you have any comments or questions, please contact Bruce Boyer, CPM at (916) 653-7181, or via e-mail at: bboyer@energy.ca.gov

Sincerely,

ROGER E. JOHNSON, Deputy Director
Siting, Transmission, and Environmental
Protection Division

REFERENCES

AirNav.Com 2013a – Hayward Executive Airport, Airport Operations, Additional Remarks, FAA Information Effective 27 June 2013.

AirNav.Com 2013b – Metropolitan Oakland International Airport, Instrument Approach Procedures, ILS and GPS Approaches for Runway 29, FAA Information Effective 27 June 2013.

Alameda County 2012 – Community Development Agency, Hayward Executive Airport – Airport Land Use Compatibility Plan, August 2012.

CEC 2002 – California Energy Commission, Final Staff Assessment, Russell City Energy Center Project (01-AFC-7), June 2002.

CEC 2007a – California Energy Commission, Staff Assessment – Part 1 and Part 2 Combined, Russell City Energy Center, Amendment No. 1 (01-AFC-7C), June 2007.

CEC 2007b – Russell City Energy Center, Amendment No. 1 (01-AFC-7C), Final Commission Decision, October 2007.

CEC 2013 – California Energy Commission, Report of Conversation between Joseph Hughes, California Energy Commission, and John Speckin, FAA, Airport Obstruction Standards Committee, on August 23, 2013.

Caltrans 2011a – Division of Aeronautics, California Aviation System Plan, Policy Element, October 2011.

Caltrans 2011b – California Airport Land Use Planning Handbook, October 2011.

City of Hayward 2011 – Hayward Executive Airport, *Airport Layout Plan Update*, January 2011.

City of Hayward 2013 – Report of Conversation between James Adams, California Energy Commission, and Doug McNeeley, Hayward Executive Airport Manager, September 5, 2013.

CPA 2007 – California Pilots Association, Declaration of Carol Ford in Support of Group Petitioners' Petition to Intervene, Reopen the Administrative Proceedings, Reopen the Evidentiary Record and for Reconsideration, November 7, 2007.

FAA 2012 – Aeronautical Information Manual, Section 7-5-15 – *Avoid Flight in the Vicinity of Thermal Plumes*, February 9, 2012.

FAA 2013a – San Francisco TAC, VFR Terminal Area Chart, 83RD Edition Effective 22 AUG 2013.

FAA 2013b – Airport/Facility Directory Southwest U.S., Effective 22 AUG 2013.

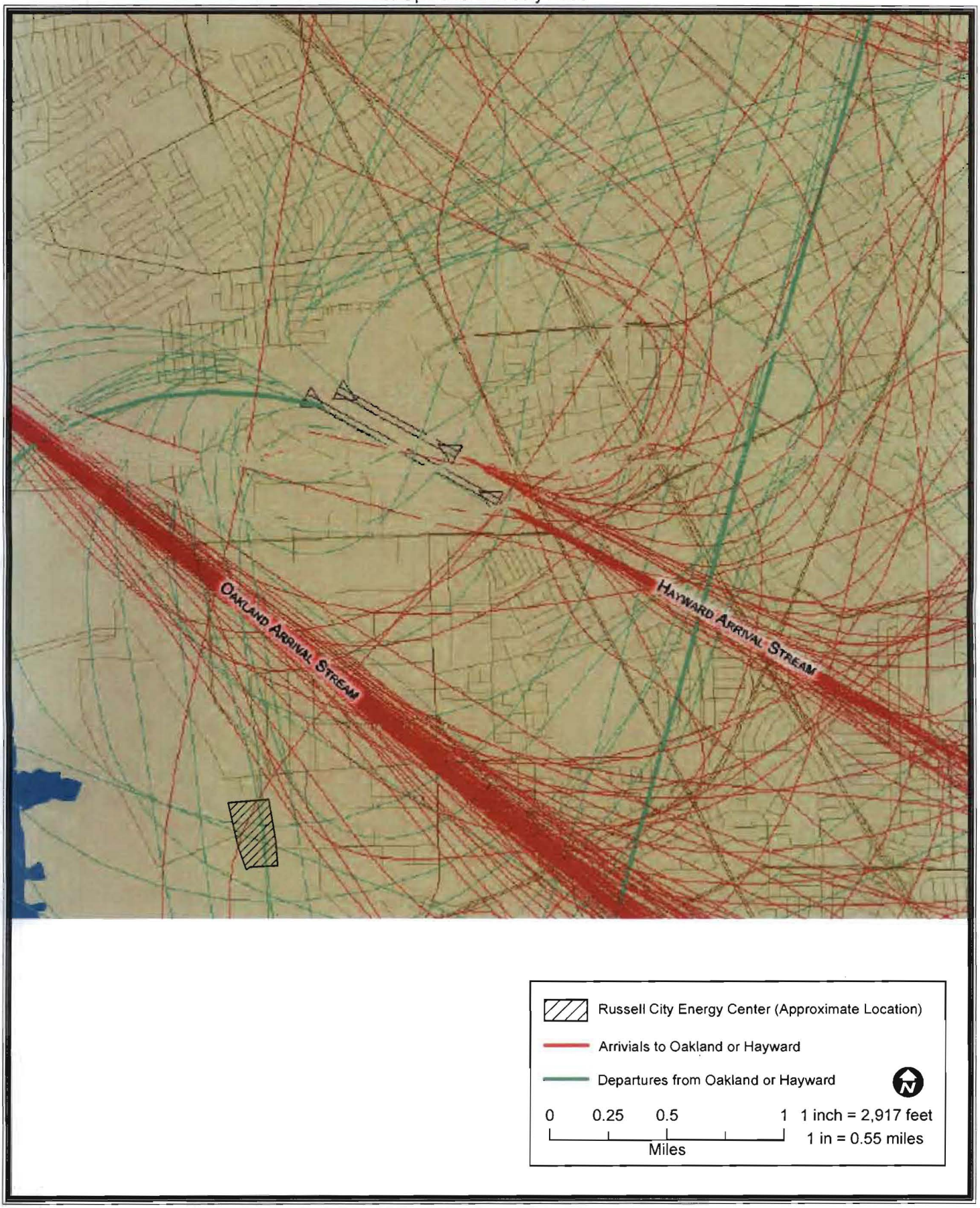
MITRE 2012 – *Expanded Model for Determining the Effects of Vertical Plumes on Aviation Safety*, September 2012.

NBAA 2013 – National Business Aviation Association, *FAA Expands Size of Protected Airspace for Circling Approaches*, May 27, 2013.

FAA 2006. *Safety Risk Analysis of Aircraft Overflight of Industrial Plumes*. Gary L. Powell, et.al., Flight Procedure Standards Branch, January 2006.

RUSSELL CITY ENERGY CENTER-TRAFFIC AND TRANSPORTATION FIGURE 1

Flights Track from The Airport Noise and Operations Monitoring System (ANOMS 8) Depicting A Week's Worth of Operations in July 2008



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SOURCE: Hayward Executive Airport, Airport Layout Plan Update Prepared by AECOM January 2011