

VNY-CAC Ad-Hoc Noise Committee  
Report #1 – June 3, 2014



## REPORT ON VAN NUYS AIRPORT NOISE ISSUES

Presented by: VNY-CAC Ad Hoc Noise Committee

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### This PowerPoint will cover:



- Part I – Introduction – Land Use
- Part II – Regulatory Framework
- Part III – Operational Issues
- Part IV – Noise Measures
- Part V – Helicopter Noise Issues
- Part VI – Conclusions

### Part I – Introduction - Land Use



- To fully understand airport noise impacts, one must have a sound grasp of land use issues and how they influence airport noise.
- Land Use, Zoning, Federal and local regulations and the frequency and type of aircraft all impact the noise experienced by residents.
- Human response to noise varies from person to person, and by time of day or evening.
- The number and types of residential structures, sound proofing and population density also play a part in this complex issue.

### Van Nuys Airport - 1941

Van Nuys Airport was originally named Metropolitan Airport



## VNY Original Zoning

Gray areas are zoned Industrial, Clear areas are zoned Residential Single Family R-1 or Multi R-3 [Bruster Map]



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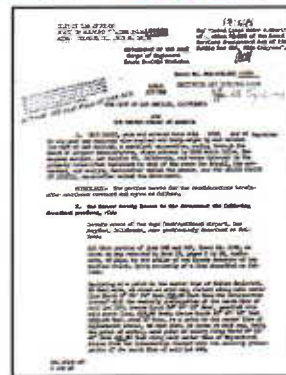
## The 1940s

- With the outbreak of World War II, in 1942 the U.S. government purchased Metropolitan Airport and converted it to a military base to help protect the West Coast. The military also purchased an additional **153 acres** of land for the construction of the Van Nuys Army Airfield, using new runways to train hundreds of P-38 Lightning pilots.
- The airport became a vital defense-manufacturing center during the war. In 1944, a joint venture between the U.S. Navy and Lockheed Corporation created an aircraft modification facility known as the Navy Lockheed Plant.
- In 1949, the City of Los Angeles purchased the airport from the U.S. War Assets Administration for the token fee of \$1, with the agreement that the California Air National Guard base continue to operate at the site. The name of the airport, which by then covered **400 acres**, changed to San Fernando Valley Airport.

## Van Nuys Airport - 1944



## 1949 Los Angeles Buys VNY For \$1



## 1950 VNY Land Map

Red denotes perimeter of original purchase from War Assets Administration (WAA). Runways terminated at Sherman Way.

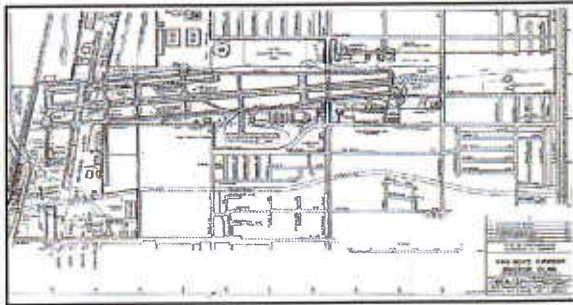


## The 1950s and 1960s

- In the 1950s, the Air National Guard replaced its propeller fleet with F-86 jets, plus built newer, more permanent facilities at the airport. The 1950s brought substantial growth to general aviation at the airport. By 1957, the airport experienced its final name change to *Van Nuys Airport*.
- Residential growth also continued. The City of Los Angeles Zoning Commission allowed developers to build 150 new homes in areas surrounding the airport. In 1959, completion of the Sherman Way underpass enabled extension of the main runway from 6,000 to 8,000 feet as VNY ranked 25th in operations nationwide.
- In the 1960s, VNY acquired new land to meet these needs, and as the airport grew, in the mid-1960s. The Van Nuys Golf Course was completed in the clear zone at the south end of the airport in the late 1960s, and a new control tower was constructed that is still in use today.

## VNY Land Map – February 8, 1960

Runways lengthened from 6,000 to 8,000 ft -- tunneled under Sherman Way to Van Owen. Clear zone occupied Van Owen to Victory Blvd.

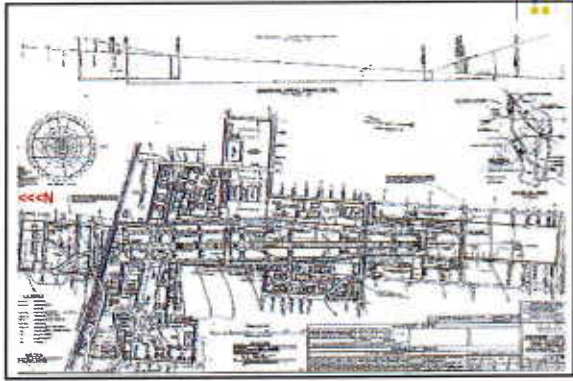


## The 1990s

- The 146th Airlift Wing of the California Air National Guard relocated from VNY to the Channel Islands in 1990.
- March/April 1992 Master Plan study initiated by City Council, with Consultant Consensus Planning, Inc. hired to receive public input. March 1992, Los Angeles World Airports (LAWA) began receiving public input from various stakeholders impacted by the VNY Master Plan.
- In early 1995, Planning Associates Inc. was selected to act as the primary consultant for the project. LAWA and City Planning Department staff then began an on-going joint effort to identify general plan and zoning classifications for the airport.
- November 1996 Draft EIR and Draft Master Plan released for public review. Public hearing on EIR and Draft Master Plan.

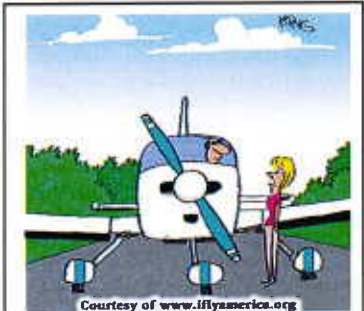
## VNY Land Map – March 4, 1994

New features, facilities added between 1960 to 2000



## The 21<sup>st</sup> Century

- 2001 LAWA completed Part 150 Airport Noise Compatibility Planning Study for VNY
- 2002 Non-Addition Rule became effective January 1
- 2004 LAWA approves Part 161 study contract
- 2006 Master Plan signed by Mayor
- 2009 VNY Phase-out of Noisier Aircraft
- 2010 VNY Propeller Park



Courtesy of [www.iflyamerica.org](http://www.iflyamerica.org)

*"What do you mean you were having so much fun flying you lost track of time? Instead of three hours, you were gone a month!"*

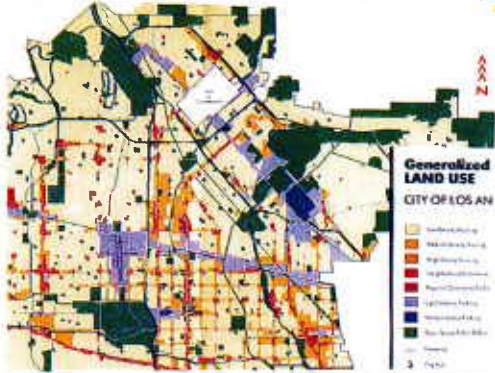
## VNY Today





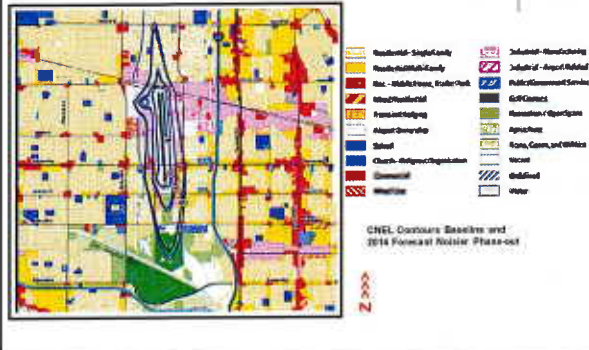
## Generalized Land Uses Near VNY

Purple areas represent Light Industrial zoning



## Specific Zoning Near VNY

VNY is an island surrounded by densely populated residential communities



## Part II – Regulatory Framework

- VNY is influenced and regulated by a complex series of regulations involving International, Federal, State, County and City governments and institutions.
- Together these regulations, laws, rules, practices, policies, ordinances and guidelines make up VNY's Regulatory Framework.
- To a large extent this Framework, City ordinances and Los Angeles World Airports (LAWA) policies and financial limitations impact what and how VNY addresses its noise issues.
- The next slides will describe some of the elements of VNY's Regulatory Framework.

To learn more, to go: [http://www.lawa.org/welcome\\_VNY.aspx?id=1034](http://www.lawa.org/welcome_VNY.aspx?id=1034)



## VNY Noise Curfew

- This program prohibits aircraft generating departure noise level equal to or above 74 decibels (per Federal Aviation Advisory Circular Regulation 36-3) from departing the airport between the hours of 10 p.m. and 7 a.m. Aircraft with a noise standard rating of Stage 3 are not affected by the curfew until 11 p.m. Therefore, Stage 3 aircraft with a departure noise level below 74 decibels and Stage 4 aircraft are not affected by the curfew at all.
- Exempt from the curfew are helicopters, medical emergency flights, military aircraft, and government operated aircraft for emergency purposes. Additionally, run-ups for engine maintenance activity are allowed only between 7 a.m. and 7 p.m. in designated areas.
- The regulation includes fines for violations ranging from \$750 to \$3,500, and a provision that may prevent violators from using the airport for up to three years.

## Stage 2 Phase-out

- On April 17, 2006, BOAC re-adopted Board Resolution 17154, originally approved June 13, 1990, initiating a seven-year phase-out of Stage 2 aircraft based at VNY pursuant to regulations and statutes existing prior to passage of ANCA by Congress.
- On July 17, 2006, BOAC accepted the advise of the Executive Director and directed LAWA to pursue the dual track method for phasing out Stage 2 aircraft from VNY in the shortest possible time by pursuing both the seven-year phase-out ordinance and an immediate ban via the Part 161 Study process.

## Phase-out Time Table

- In a move independent of the Non-Addition Rule, but which supersedes it, in late 2009 the Los Angeles City Council approved a new ordinance with a timeline for a phase-out of noisier aircraft at VNY.
- The ordinance prohibits operation of aircraft with certified takeoff noise levels of 85 dBA or higher starting in 2009 (there were no affected operations at this level).
- It moved to 83 dBA in 2011, and goes to
- 80 dBA in 2014, and then to
- 77 dBA in 2016.

## The Non-Addition Rule

- The enforcement of the Non-Addition Rule became effective on January 1, 2002.
- The Non-Addition Rule, an amendment to the existing VNY Noise Abatement and Curfew Ordinance, prohibits any additional Stage 2 aircraft (older aircraft) with noise levels exceeding 77dBA (a unit of decibel measurement) from being based at VNY subject to certain exceptions.
- Specifically, aircraft owners who "grandfathered" aircraft through 2005 could continue to operate them until the end of 2010, when these aircraft fell under the rule's restricted status.
- The Non-Addition Rule also prevents non-based Stage 2 aircraft with noise levels exceeding 77dBA from being parked, tied down, or hangared at the airport for more than 30 days in any calendar year subject to exception for major maintenance, repair, and refurbishment. Fines for violation of the rule have the same penalty structure as the Noise Abatement and Curfew Regulation.

## Quiet Jet Departure Program

This program lessens noise in the local community by having pilots agree to use predetermined, recommended procedures to reduce jet departure noise. Under the voluntary program that began in 1994, pilots agree to:

- Use noise abatement techniques as established in manufacturers' operating manuals or the National Business Aviation Association Noise Abatement Program;
- Make every effort within adequate safety margins to abide by the proper noise-reducing techniques;
- Actively participate in the monitoring program by working with airport staff and others to research any residential complaints regarding one of their flights; and work with airport staff and the Van Nuys Airport Association to support and encourage other jet operators to participate in the program.
- A noise monitor near the south end of the runways measures departure sound levels, and noise management staff analyze this data on a daily basis.
- Aircraft owners and operators are notified in writing when they exceed criterion noise levels.

## Quiet Jet Departure Updated

- In January 2012, VNY updated the Quiet Jet Departure program to include new not-to-exceed target noise levels for specific aircraft types and to expand the number of aircraft included. The new noise levels are based on 10 years of aircraft noise data and affect the noisiest 5% of jet departures from VNY.
- In addition, the updated program includes an annual "Friendly Flyer" award for operators that achieve outstanding compliance with the VNY Fly Friendly Program.

## No Early Turn Program

- With 24-hour monitoring, this program detects pilots who turn too early after departure and subsequently fly over adjacent residential areas.
- The VNY noise management branch office notifies pilots (other than those specifically instructed to turn early by air traffic control) of operations conducted contrary to this program.
- The No Early Turn Program educates aircraft owners/operators of airport noise abatement procedures to reduce the impact of departures on airport neighbors.



## Helicopter Route and Altitude Deviation Program

This program notifies helicopter owners/operators of arrival and departure operations that deviate from established FAA routes. Once again, the program uses the notification process as a tool to:

- Request compliance with established routes and altitude minimums.
- Maximize awareness of the airport environment and noise issues.
- Minimize flight and noise impacts in nearby residential areas, especially during curfew hours.

Although the FAA has no minimum altitude restrictions for helicopters, it does have agreements from VNY based operators to follow established routes and recommended altitude minimums. VNY also continues to work with the FAA and helicopter operators to address additional ways to reduce noise.

## Airport Noise and Capacity Act

ANCA an important landmark grandfathering regulations

- The Airport Noise and Capacity Act (ANCA) created a comprehensive method for regulating aviation noise. Congress directed the Secretary of Transportation to issue the new ANCA-implementing regulations for establishing a national aviation noise policy by July 1, 1991.
- In 2005 LAWA attempted to address the aircraft noise issue by embarking on simultaneous studies of potential noise-based operating restrictions at both Van Nuys Airport (VNY) and Los Angeles International Airport (LAX).
- The process was required to follow the Airport Noise and Capacity Act of 1990 (ANCA), and Federal Aviation Regulation (FAR) Part 161 Noise and Approval of Noise and Access Restrictions.

To learn more, go to:  
[http://www.lawa.org/uploadedFiles/VNY/VNY\\_Part\\_161/Airport\\_Noise\\_and\\_Capacity\\_Act\\_of\\_1990.pdf](http://www.lawa.org/uploadedFiles/VNY/VNY_Part_161/Airport_Noise_and_Capacity_Act_of_1990.pdf)

## Van Nuys Airport Part 150

- Aircraft noise was an important issue facing airports and communities throughout the United States. Formal standards were established by Congress under the Aviation Safety and Noise Abatement Act of 1979, which created a single system for determining the exposure of individuals to airport noise, and a standardized airport noise compatibility planning program.
- The Federal Aviation Administration (FAA) prescribed a set of procedures and standards under the U.S. Code of Federal Regulations, Title 14 Part 150, and entitled Airport Noise Compatibility Planning.
- A Part 150 Study consists of two technical elements:

Noise Exposure Maps (NEMs), which identify the levels of airport noise in areas around the airport.

Noise Compatibility Program (NCP), which are measures designed to reduce noise and incompatible land uses within the noise exposure area.

## Part 150

Airport Noise Compatibility Planning Study

- In August 2001, LAWA completed VNY's Part 150 Airport Noise Compatibility Planning Study. Airports submit documentation to the FAA for review, acceptance of technical analyses and approval of Noise Compatibility Program measures. Approved measures may be eligible for federal funding assistance.
- LAWA submitted the required documentation in August 2001, and revised it in January 2003. The voluntary program provides airports with guidance on technical, documentation and public consultation procedures.
- The FAA found the Noise Exposure Maps (NEMs) in compliance on April 20, 2009 and issued a Record of Approval (ROA) for the NCP on October 16, 2009.

To learn more, go to: [http://www.lawa.org/welcome\\_VNY.aspx?id=6845](http://www.lawa.org/welcome_VNY.aspx?id=6845)



## Residential Soundproofing

- VNY helps those residents who live closest to the airport through its residential soundproofing program, which uses modifications such as insulation and double-paned windows to significantly reduce noise levels at residences.
- From 1999, when the program began, through its completion in October 2012, the airport spent nearly \$10 million soundproofing 779 dwellings – with participation strictly voluntary and at no cost to property owners.

## Soundproofing Duration

Only residents with in the 65 CNEL or higher qualified

- The program covered residential buildings in areas of the City with a recorded Community Noise Equivalent Level (CNEL) of 65 decibels (dB) and higher as shown on the third quarter of 1998 noise contour map produced by Los Angeles World Airports.
- The Residential soundproofing program began implementation of the first soundproofing project around Van Nuys Airport in 2001. At that time, LAWA opened a community office, which remained open to the public until 2007. Since the start of the program, LAWA soundproofed 779 residential dwelling units.
- At this time, soundproofing is not offered for Van Nuys residences.

## Van Nuys Airport Master Plan

- The Van Nuys Airport Master Plan approved in 2006 is an element of the Los Angeles City General Plan and consists of only the land within the boundaries of the Airport.
- The purpose is to provide a comprehensive long-term Plan that encourages the orderly development of on-airport land uses, enhances the environment and increases compatibility between the airport and surrounding communities.
- The Plan, consists of the Plan Map and the Plan text which includes objectives, policies and measures that will guide the long-term development and use of the airport as a general aviation center in Southern California and promote the compatibility of the Airport with the surrounding community.
- To learn more, go to:  
[www.lawa.org/.../VNY%20Master%20Plan%20with%20Ait%20J%20map.pdf](http://www.lawa.org/.../VNY%20Master%20Plan%20with%20Ait%20J%20map.pdf)

## The VNY Part 161 Study

- On July 19, 2004, BOAC approved the selection of Harris Miller Miller & Hanson Inc. (HMMH) to negotiate a contract to perform the Part 161 studies for LAX and VNY.
- The Part 161 Study, including the ultimate submissions to the FAA, were to address nine elements in a "severable" fashion, to permit the FAA to review each proposed measure separately and so that any required FAA approval or disapproval will not affect the FAA's considerations of the others.
- The proposed restrictions would be established through new or amended City Ordinances, regulations, lease conditions, or use agreements, with sanctions for noncompliance.

To learn more, go to: [http://www.lawa.org/uploadedFiles/VNY/VNY\\_Part\\_161/CFR-2011-01e14-vol3-part161.pdf](http://www.lawa.org/uploadedFiles/VNY/VNY_Part_161/CFR-2011-01e14-vol3-part161.pdf)

## Part 161 Study Restrictions

Seven of the Noise Control Measures proposed in the Part 150 require a Part 161 study because they would restrict some Stage 2 or Stage 3 aircraft

- 1. Incentives/Disincentives in Rental Rates: Establish a set of incentives and disincentives through differential rental rates to encourage the greater use of quieter aircraft and less use of noisier aircraft at VNY. Rental rates for leases and tie downs would be correlated to the level of noise generated by the aircraft (NCM 29).
- 2. Incentives/Disincentives in Landing Fees: Establish a system of differential landing fees for aircraft using VNY with higher landing fees for noisier aircraft and lower landing fees for quieter aircraft (NCM 30).
- 3. Establish Fines for Violations of VNY Noise Abatement Policies: The Proposed Restriction would make the voluntary "Quiet Jet Departure" program mandatory and establish the following penalties: \$500 for the third (3rd) violation; \$1,000 for the fourth (4th) violation; and \$2,000 for the fifth (5th) and subsequent violations. An operator who commits a sixth (6th) violation would be banned from using VNY (NCM 31).

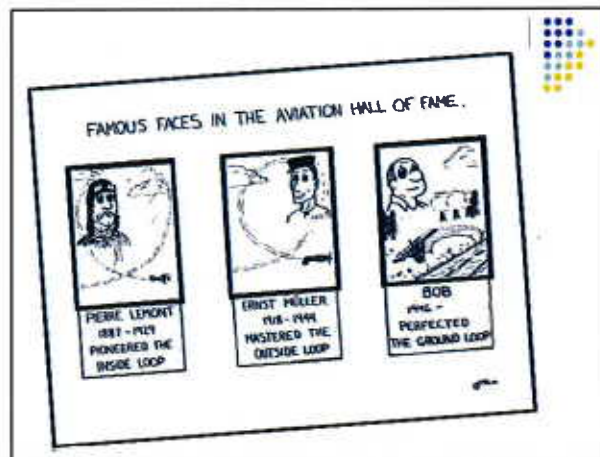
## Part 161 Study Restrictions – Cont.

- 4. Establish Maximum Daytime Noise Limits: Establish a maximum daytime noise limit for all aircraft operating at VNY of 77 dBA (NCM 32).
- 5. Establish a Limit on Stage 3 Jets: Establish a cap on the number of Stage 3 jets that may be based at VNY (NCM 33).
- 6. Expansion of the VNY Curfew: Amend the existing curfew ordinance to expand the hours of the current curfew to include all non-emergency jets and non-emergency helicopters as aircraft that would come under the provisions of the curfew during the hours of 10:00 pm to 7:00 am (NCM 34).
- 7. Establish a Cap or Phase-Out of Helicopters: Establish a cap on the number of, or a phase-out of helicopters from VNY (NCM 35).

## Additional Part 161 Restrictions

Approval of the VNY Master Plan in early 2006 led to expansion of the Part 161 Study scope. The VNY Master Plan includes numerous Part 161 references. Most importantly, it adds two alternatives to the seven identified in the Part 150 Study:

- 8. Phase out Stage 2 aircraft from VNY in shortest possible time via the Part 161 process.
- 9. Extend the ending time of the existing VNY curfew from 7 a.m. to 9 a.m. on weekends and holidays



## Enforcement of Regulations

- Approving a set of regulations to control airport noise is one thing – assuring compliance is another – that requires enforcement.
- Compliance involves both identifying regulation violators, and then effective enforcement action.
- Several tools are available including the VNY WebTrak system that watches the movement of flights and air traffic patterns. Legal action by the Los Angeles City Attorney must ensure compliance.

## VNY WebTrak Flight-Tracking and Noise Information

- The VNY Internet Flight Tracking System using Lochard's WebTrak watches the movement of flights and air traffic patterns in the San Fernando Valley and the Los Angeles area.
- This flight tracking system includes specific information about flights from VNY and Burbank Airport (BUR), as well as air traffic transiting through the region. Information includes the aircraft's type, altitude, origin/destination airports, and flight identification.
- **Green** aircraft icons represent departures from VNY.
- **Blue** aircraft icons represent arrivals to VNY
- **Yellow** aircraft icons representing aircraft operation to/from BUR.
- **Black** aircraft icons represent aircraft operating to or from another airport in the region, or that are transiting through the region and bypassing local airports.

## WebTrak Display

## Noise Violations 2002 - 2007

Additional Information for Agenda Item, Staff Report 1-A  
CAC Meeting - Tuesday August 7, 2007

Van Nuys Noise Violations  
Current to 07 July 31, 2007

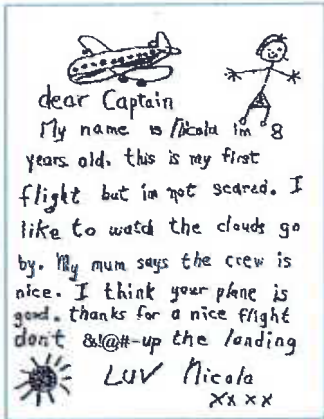
	2002	2003	2004	2005	2006	2007
Curfew:	11 companies	5 companies	6 companies	1 companies	0 companies	2 companies
	\$ 2,750.00	\$ 2,750.00	\$ 4,500.00	\$ 750.00	\$ 3,250.00	\$ 3,000.00
Non-Repairs:	7 companies	10 companies	5 companies	2 companies	3 companies	1 company
	\$ 6,200.00	\$ 19,950.00	\$ 28,250.00	\$ 1,750.00	\$ 2,250.00	\$ 1,550.00
Engine Run-Up:	3 companies					
	\$ 2,950.00	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total</b>	<b>\$ 15,700.00</b>	<b>\$ 22,200.00</b>	<b>\$ 29,780.00</b>	<b>\$ 4,500.00</b>	<b>\$ 6,000.00</b>	<b>\$ 10,500.00</b>

Pending Open Note:  
The City Attorney's office at Los Angeles World Airport has 11 pending open cases. Of these 11, there are 6 pending Note Audits, 4 pending Note Audits, and 1 pending Note Audit.

\$ Indicates Fine Collected







### Total Operations 2000 - 2013

2000	492,656
2001	463,665
2002	504,303
2003	466,449
2004	454,753
2005	415,961
2006	400,398
2007	380,794
2008	403,727
2009	380,952
2010	339,407
2011	298,049*
2012	263,948*
2013	273,173*

### 2013 VNY Operations

	AIRAC Types*	Jets**	Helicopters**	Props and Turbo Props***
Annual Operations	273,173	38,322	31,187	203,464
Daily Average Operations	748	105	85	557

\*Values obtained from VNY Aircraft Operations Statistics reports for 2013

\*\*Values obtained from ANOMS

\*\*\*Values calculated by subtracting "jets" and "helicopters" totals from "AIRAC Types"

Operation Type	2013 Total	Percent Deviations
Helicopter Operations	31,187	
Helicopter Route Deviations	1752	5.6%
Non-Approved Route Deviations	427	3.4%

Note: Total Helicopter Deviations include Pilot initiated, Tower initiated, and Exempt Public Safety; Non-Approved Deviations include Pilot initiated only.

### Stage 2 Stage 3 Jet Operations

YEAR	TOTAL OPS	STAGE 2	STAGE 3	TOTAL JETS
2008	463727	3731	35275	39006
2009	380952	3383	29662	33045
2010	339407	2523	34660	37183
2011	298049	2046	35991	38037
2012	263952	1749	36512	38261



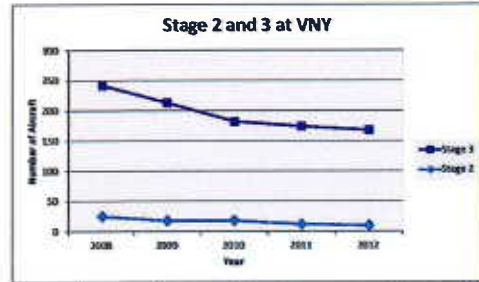
Source: ANOMS

### Based Aircraft 2000 - 2012

Year	No. Aircraft	Jet	Light	General	Other	Total	Jet	Light	General	Other	Total
2000	247	98	11	17	8	24	24	309			
2001	279	88	11	16	8	24	27	636			
2002	288	87	5	13	8	24	21	657			
2003	313	84	7	16	8	24	28	723			
2004	396	86	5	11	212	23	23	736			
2005	335	73	3	14	176	23	24	789			
2006	388	74	6	13	188	26	28	784			
2007	362	66	5	21	178	27	24	823			
2008	414	67	3	29	185	23	23	908			
2009	424	67	2	22	137	21	19	887			
2010	441	66	3	23	149	27	24	903			
2011	436	63	1	23	179	28	24	883			
2012	434	60	1	22	174	27	23	788			

### Stage 2, 3 Aircraft Based at VNY

This chart reflects domiciled aircraft at VNY, not how frequently they fly or their number of operations



Year	2008	2009	2010	2011	2012
Stage 2 Aircraft	25	18	18	12	10
Stage 3 Aircraft	247	195	164	162	158

### Fuel Delivery 2011 - 2013

The volume of Jet fuel vs. aviation fuel delivered offers insights into the trends of jet vs. piston aircraft operations



Year	Jet A	AvGas
2011	17,311,894	387,960
2012	17,293,947	388,542
2013	16,488,149	395,283



## VNY Fuel Delivery 5-22-2014

Note: Flowage fees are not collected from GSD providers

	Revenue	Costs & Fees	Day Levy	Excise	DIT	Spokane	Month Total	VNY Fuel
<b>Network</b>								
Jet A Fuel	0	202,228	202,082	0	0.002	3,699,547	3,699,809	3,699,809
Jet A Stop	46,467	194,111	147,644	0	n/a	3,699,899	3,746,366	3,746,366
Jetex Fuel	0	0	0	0	0	13,768	13,768	13,768
Jetex Stop	4,309	150	0	0	n/a	26,213	30,522	30,522
<b>Colony</b>								
Jet A Fuel	0	190,840	190,840	0	13,374	615,257	1,000,000	1,000,000
Jet A Stop	49,634	200,476	150,842	0	n/a	654,548	1,000,000	1,000,000
Jetex Fuel	0	0	0	0	0	13,768	13,768	13,768
Jetex Stop	4,309	150	0	0	n/a	26,213	30,522	30,522
<b>Market</b>								
Jet A Fuel	0	228,867	228,867	0	0.000	3,699,609	3,699,609	3,699,609
Jet A Stop	45,255	214,118	168,863	0	n/a	3,699,609	3,763,972	3,763,972
Jetex Fuel	0	0	0	0	0	13,768	13,768	13,768
Jetex Stop	4,309	150	0	0	n/a	26,213	30,522	30,522
<b>April</b>								
Jet A Fuel	0	115,054	115,054	0	0.000	183,748	1,837,400	1,837,400
Jet A Stop	12,402	126,456	114,054	0	n/a	183,748	1,837,400	1,837,400
Jetex Fuel	0	0	0	0	0	13,768	13,768	13,768
Jetex Stop	4,309	150	0	0	n/a	26,213	30,522	30,522

## Part IV – Noise Measures

- With a foundation and understanding of land use, zoning, regulatory and operational issues, we can now explore noise measurement, its impacts on individuals and communities.
- The next slides describe how aircraft noise is monitored and measured, its impact on people and how total community noise is measured.

## How Noise Is Monitored

- Noise around an airport may be monitored or measured either *empirically* (taking observable sound measurements), or *theoretically* (using computer based noise models).
- Empirical noise measurements are taken by placing sensitive noise microphones around an airport and physically recording and monitoring sound levels.
- Theoretical Noise is modeled using the FAA's Integrated Noise Model (INM). This software program receives input data on the number and type of annual operations at an airport, analyzes it and then plots it on a geographical map.
- Both methods are used at VNY.

## VNY Monitoring Stations

VNY has 14 microphone stations shown below



## FAA Integrated Noise Model (INM)



- The Integrated Noise Model (INM) is a computer model that evaluates aircraft noise impacts in the vicinity of airports. It is developed based on the algorithm and framework from SAE AIR 1845 standard, which used Noise-Power-Distance (NPD) data to estimate noise accounting for specific operation mode, thrust setting, and source-receiver geometry, acoustic directivity and other environmental factors.
- The INM can output either noise contours for an area or noise level at pre-selected locations. The noise output can be either exposure-based, maximum-level-based, or time-based.
- The INM is preferred model used for FAR Part 150 noise compatibility planning and for FAA Order 1050 environmental assessments and environmental impact statements.

## INM Applications



- Assessing current aircraft noise impacts around a given airport or heliport
- Assessing changes in noise impact resulting from new or extended runways or runway configurations
- Assessing changes in noise impact resulting from new traffic demand and fleet mix
- Evaluating noise impacts from new operational procedures
- Evaluating noise impacts from aircraft operations in and around National Parks

## Inputs To The INM



- Runway orientation, length, etc.
- Aerodynamic profiles
- Flight tracks - Approach and Departures
- Touch-and-go, Circling, Over-flights
- Flight operations data
- Numbers aircraft assigned to each track
- Percent aircraft assigned to track
- Run-up operations, engine test, etc.
- Selection of Noise Metric - CNEL, etc.

## Outputs From The INM



- Noise contours – computer plots
- Metric population calculations
- CNEL level for a specific given area
- Population estimates within a given area
- Display number of people living within 65 CNEL



## Evaluating Airport Noise

- Airport noise is often the most controversial environmental impact the FAA examines. Changes in airport runway configurations, aircraft operations, aircraft types using the airport, or aircraft flight characteristics affect noise levels.
- FAA's noise analysis primarily focuses on how proposed airport actions would change the cumulative noise exposure of individuals in areas surrounding the airport.
- Airport noise is a concern when determining potential effects on other environmental resources as well. For example, protected resources and historic and cultural sites.
- The following provides common terminology used when discussing airport and aircraft noise issues:

## Decibel (dB)

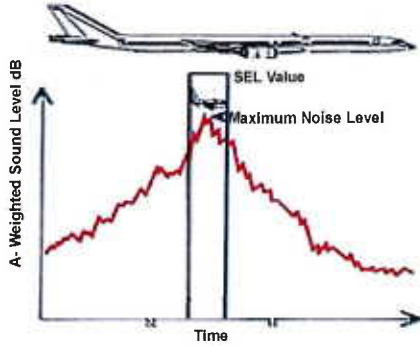
- The Decibel (dB) is the standard unit used to express noise levels. The dB measures the magnitude or intensity of sound through a range of sound pressure levels that can be heard by the human ear.
- Most people perceive a 10 dB increase as a doubling of loudness, meaning that 75 dB usually seems twice as loud as 65 dB. Decibel A Scale (dBA): The sound pressure level using a "weighting filter" that correlates to the human ear's sensitivity to various frequencies.



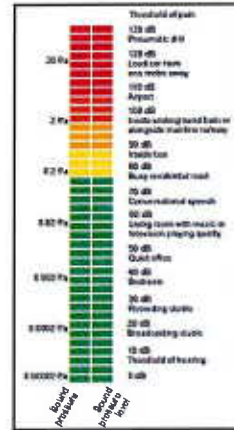
## Sound Exposure Level (SEL)

- SEL is a measure (in decibels) of the total A-weighted sound energy received at a given position throughout an entire over-flight
- SEL is measured by adding the total sound power received at a position during an over-flight and converting the result to decibels
- SEL accounts for both the amplitude and duration of an event

## Relationship of SEL To Flyover Noise



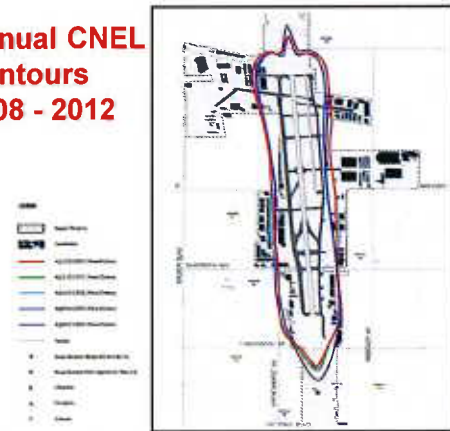
## How Noise Levels Affect People



## Community Noise Equivalent Level (CNEL)

- The CNEL is the computed average noise level for an area over a 24-hour period. The annual CNEL average is the number used by the State to administer noise regulations. DNL is the primary metric FAA uses to determine noise impacts. The FAA accepts the CNEL to assess California noise effects. Only California uses the CNEL.
- Extra weight is given to noise produced during evening and nighttime hours. The CNEL adds a 10 dB penalty to each aircraft operation between 10:00 p.m. and 7:00 a.m.
- The CNEL adds a 5 dB penalty for each aircraft operation during evening hours (7:00 p.m. to 10:00 p.m.). This evening noise penalty accounts for people's sensitivity to noise during evening hours when they may be outside and fewer noise producing activities occur.

## Annual CNEL Contours 2008 - 2012



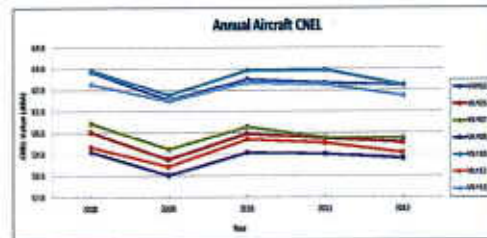
## Annual CNEL Values 2008 – 2012

VNY California State Airport Noise Standards Quarterly Report:  
4th Quarter Annual CNEL (dbA)\*

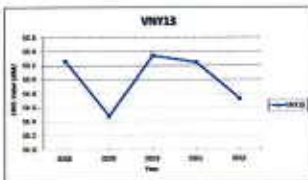
Noise Monitor	2008	2009	2010	2011	2012
VNY03	62.9	61.5	62.5	62.3	62.2
VNY05	60.0	58.8	59.9	59.7	59.5
VNY07	60.4	59.2	60.3	59.8	59.7
VNY08	59.1	58.0	59.1	59.0	58.8
VNY10	62.9	61.8	62.9	62.9	62.2
VNY12	59.3	58.4	59.7	59.5	59.1
VNY13	62.3	61.5	62.3	62.2	61.7

\*Annual values are from the VNY California State Airport Noise Standards Quarterly Report and are calculated from noise data collected during the calendar year.

## 4th Quarter Annual CNEL 2008 – 2012 – Graph



## 4th Quarter Annual CNEL 2008 – 2012 – Line Graph



VNY13	4th Quarter CNEL (dbA)
2008	62.3
2009	61.5
2010	62.3
2011	62.2
2012	61.7

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## Day Night Average Sound Level (DNL)

- DNL is the standard Federal metric for determining cumulative exposure of individuals to noise. In 1981, FAA formally adopted DNL as its primary metric to evaluate cumulative noise effects on people due to aviation activities.
- DNL is the 24-hour average sound level in decibels (dB). This average is derived from all aircraft operations during a 24-hour period that represents an airport's average annual operational day.
- Due to the logarithmic nature of noise, the *loudest* noise levels control the 24-hour average.
- DNL adds a 10 dB noise penalty to each aircraft operation during nighttime hours (10 p.m. to 7 a.m.). This penalty contributes heavily to an airport's overall noise profile.

## The Schultz Curve - Annoyance

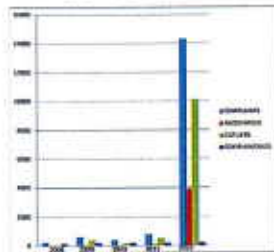
- The Schultz Curve relates specific DNL levels to the percent of people in a community whom those noise levels highly annoy.
- The Curve provides a widely-accepted dose-response relationship between cumulative environmental noise and a health and welfare parameter – annoyance.
- Federal agencies that have established Federal land use guidelines for noise use the Schultz curve. It designate the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible.

## Noise Complaint Response Program

- Residents concerned about VNY aircraft noise may contact VNY 24 hours a day, seven days a week by using the airport's online form at <http://webtrak.bksv.com/vny> or phone line at (800) 560-0010.
- Calls and e-mails are logged and the noise management staff investigates and responds to complaints (up to five per month per person) with letters when requested.
- This response includes any data found on the specific aircraft operation and information about whether the pilot deviated from any mandatory or voluntary noise abatement program.
- A monthly summary report of noise complaints is provided to VNY administration, operations, and public and community relations, as well as posted on the airport's web site at [www.lawa.org/vny](http://www.lawa.org/vny).

## Complaint Comparison

YEAR	OPERATIONS	ANNUNCIATED	OUTSIDERS	OPERATIONS
2006	219	0	22	122
2009	652	26	175	846
2010	146	26	139	170
2011	177	41	63	175
2012	14362	2930	1891	191



\*Outliers  
 2006 0 outliers made 21 complaints  
 2009 0 outliers made 133 complaints  
 2010 0 outliers made 133 complaints  
 2011 0 outliers made 413 complaints  
 2012 0 outliers made 1333 complaints  
 2012 0 outliers made 1333 complaints in all the year and Summer Season  
 Source: SBCTD

## Part V - Helicopter Specific Noise Issues

- Helicopter noise is a significant part of the complaints registered by residents.
- TV-Media, General Aviation, Sight Seeing, Fire and Law Enforcement and Hospitals frequently use helicopters because they can fly at low altitudes, hover, photograph objects or events on the ground, provide first responder and EMT service, etc.
- VNY is a major helicopter hub, it houses the LAFD fleet of helicopters, and provides training and service facilities for itinerant helicopters.
- The next slides describe helicopter routes, noise modeling and current FAA efforts to address helicopter noise in the Los Angeles basin.





## VNY - A Major Helicopter Service Provider

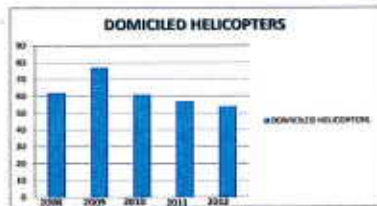
Media, General Aviation, Sight Seeing, Fire and Law Enforcement, Medical frequently use VNY facilities



## Helicopters Based at VNY

This chart reflects domiciled helicopters at VNY, not how frequently they fly or the time of day operations

YEAR	DOMICILED HELICOPTERS
2008	82
2009	77
2010	66
2011	57
2012	54



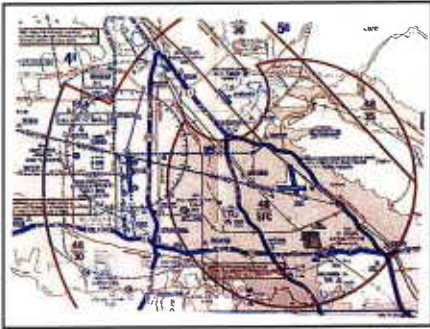
Source: VNY Aircraft Inventory

## Helicopter Arrival/Departure Routes



## Los Angeles Helicopter Route Map

Most Los Angeles freeways are officially designated by the FAA as helicopter routes



## Helicopter Noise Modeling Tools

- Heliport Noise Model (HNM)
- Integrated Noise Model (INM)
- Model Specified in FAA Part 150 and FAA Order 1050
- Helicopter Specific Propagation Algorithms
- FAA is currently working on a baseline of where known or mathematically calculated helicopters travel throughout the LA Basin

## FAA Helicopter Data Analysis

- Evaluate existing helicopter routes to identify feasible modifications that could lessen impacts on residential areas and noise-sensitive landmarks.
- Analyze whether helicopters could safely fly at higher altitudes in certain areas along helicopter routes and at specific identified areas of concern.

Presented May 8, 2014 to Los Angeles Stakeholders by Clark Desing, Operations Support Group Manager, Western Service Center

## FAA's Mathematical Algorithms

- Fixed Winged aircraft will have larger turn radiuses than helicopter
- FAA determined characteristics that are unique to helicopter operations i.e. turn radius, operating speed, hover abilities
- FAA utilized characteristics to build mathematical algorithms that determine which tracks that utilized 1200 VFR code perform like helicopters Tracks that performed like helicopters are then used by FAA workgroups to perform analysis
- Example of operating characteristics:



## Beacon Code Test Starts 2014

- Unique beacon codes for helicopter operations to increase safety in national airspace system (NAS)
- **1205:** General use
- **1206:** Law enforcement and first responder
- Test period on unique beacon codes in LA Basin scheduled to begin late summer 2014



## Helicopter Regions of Interest

The FAA is currently studying several helicopter Regions of Interest (ROI) in the Los Angeles Basin, including VNY

Residents identified various regions throughout the LA Basin affected by helicopter noise

### Regions Identified

- The Hollywood Sign
- The Hollywood Bowl
- Griffith Park
- The Getty Center
- Coastline
- Hollywood Hills
- Freeways
- LAX Plane Spotting
- TOA, VNY, SMO

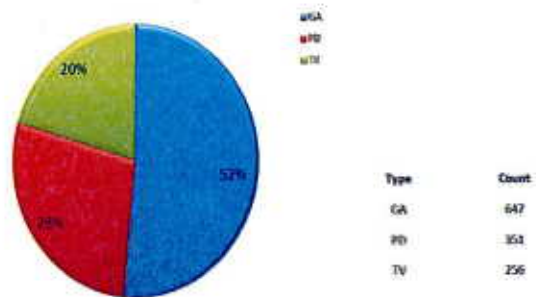


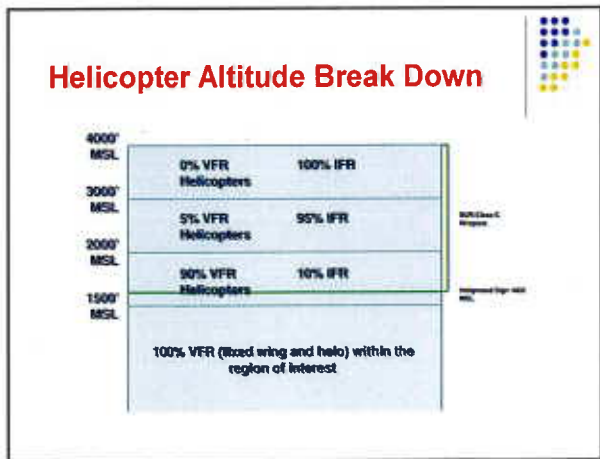
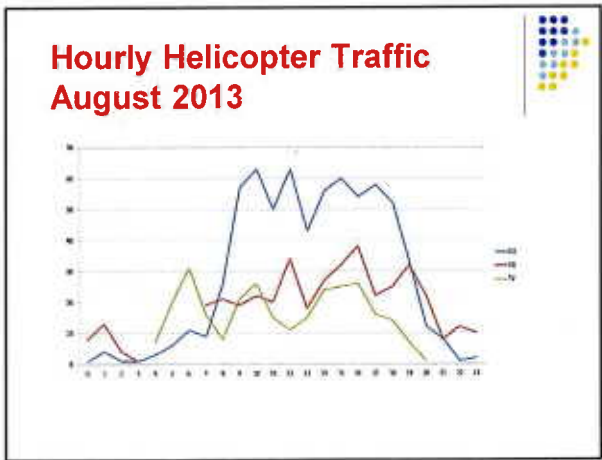
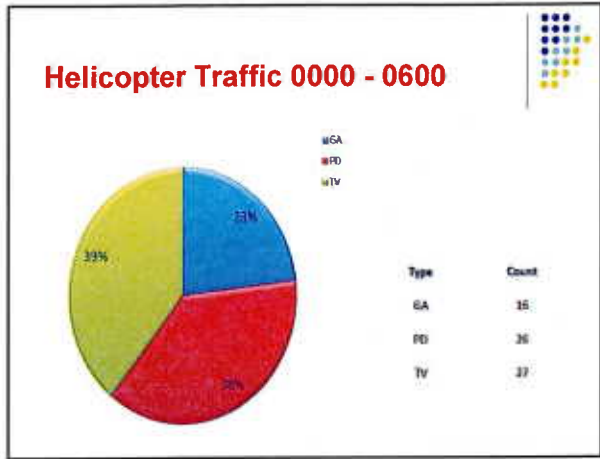
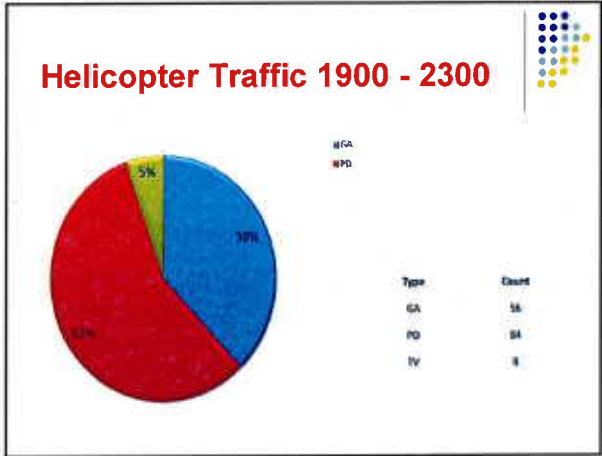
## Break Down of Helicopter Traffic

Region of Interest (ROI): Hollywood Bowl, Hollywood Sign

- The following slides demonstrate a break down by type of operation and time of day of tracks believed to be helicopters
- Categories:
  - Law Enforcement = Identified Helo with a Law Enforcement Callsign (LAPD, PD, CHP, SHF, etc.)
  - TV = Identified Helo with a TV Call sign (TV1, TV5, TTV, etc.)
  - GA = Identified Helo with known Tourist or Private N-tag, Identified Helo with Unknown Registry

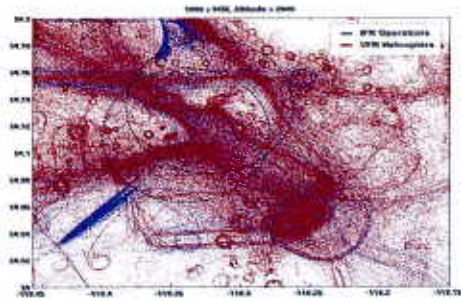
## Helicopter Traffic 0600 - 1800





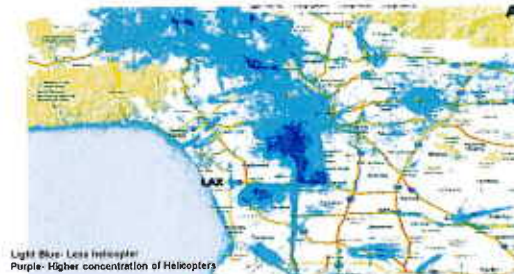
## Helicopter Density Baseline

Red denotes VFR Helicopters determined either by being identified by ATC as a helicopter or an unknown VFR aircraft exhibiting the flight characteristics of a helicopter



## Heat Map Helicopter Activity LA Basin

FAA is currently working on a baseline of where known or mathematically calculated helicopters travel throughout the LA Basin



## Part VI - Conclusions

- VNY acreage and residential neighborhoods grew in parallel
- VNY is working successfully to reduce airport noise
- The 65 CNEL contour is improving as noise trends downward
- Caution -- Noise trend could increase over time due to more Stage 3 jets operations replacing noisier Stage 2 operations
- Complaints are not directly correlated to noise levels
- Noise violator fines are too low, collections delayed or not assessed
- Helicopters continue to be a major noise problem
- If the AirPark does not succeed – jets or helicopters may take its place, if Master Plan is amended
- More noise data needs to be provided and examined
- VNY continues to work toward being a good neighbor

## Sources of Information

The information, charts, tables and graphics presented in this report were drawn from the following sources:

- *Federal Aviation Administration*
- *Fidell Associates*
- *Los Angeles City Planning Dept.*
- *Los Angeles World Airports*
- *Los Angeles Times*
- *National Aeronautics and Space Administration*



**Thank you for watching**

