Update for BWFS Meeting

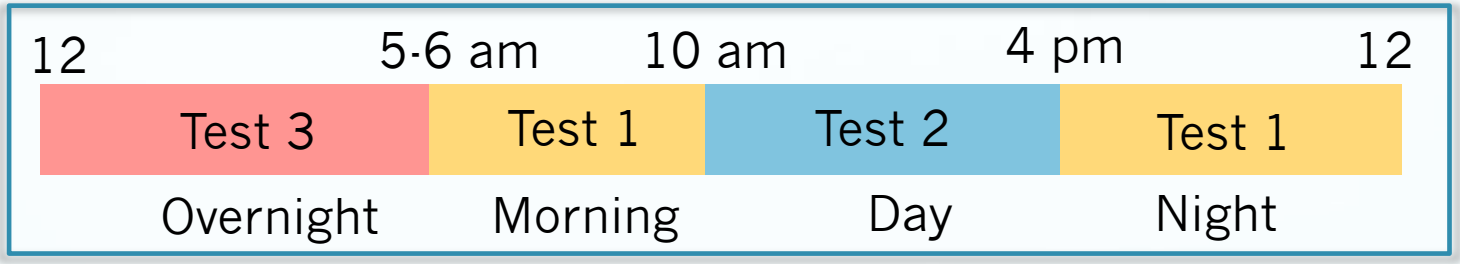
Nov. 16, 2015

Myron Kassaraba
Town of Belmont Representative to the Logan CAC
logancac@belmont-ma.gov

Edited version from what was presented at the meeting.

Logan CAC Update

- Logan CAC moving ahead with BLANS 3 Runway Use Plan testing.



- Graphic for illustration – actual times may differ.
- Runway Use Test 1 & 2 looked at changes in runway configuration. Test 3 will look at overnight operations. Test 4 – TBD
- CAC is getting commitment from Massport to provide historical runway use and flight path data. Timing TBD.
- Logan CAC is not a "public entity" and is not subject to Open Meeting Law though new President open to having non-member attendees. Will let BWFS know when next meeting is scheduled.

Massport CAC

- Still having quorum issues. Legislature failed to pass requested modifications easing quorum requirement.
- We've had two meetings – none of them official since we did not have a quorum. Reps from Arlington, Belmont, Cambridge, Somerville and Watertown have been at both meetings.
- No Bylaws approved, no Officers elected, no budget or sub-committees at this time.
- Massport CAC is covered by Open Meeting Law and meetings are posted to the Massport web site and open to the public.

33L Municipal Working Group

- Organizational meeting on October 28th, hosted by Belmont of neighboring communities affected by 33L RNAV SID.
- Attending were: Arlington (Selectman Joe Curro & Frank Ciano), Belmont (Town Administrator David Kale, Myron Kassaraba, Bob Reardon), Cambridge (Bill Deignan), Watertown (Dennis Duff, Harvey Steiner). Wig Zamore from Somerville was unable to attend.
- We set out a general framework that we would work together in our approach to our Legislators, Massport and the FAA to specifically address issues with the 33L RNAV SID Procedure.

33L Working Group (cont.)

- 33L Working Group Platform elements:
  1. We want 33L departures to get higher faster.
  2. We want greater dispersion of the 33L RNAV flight paths.
  3. We want fewer overnight flights over land
  4. We want a prohibition on older, noisier planes that are flown by freight carriers and some international airlines
  5. We want the airport operator - Massport - to work with the Working Group to evaluate these options including providing access to data & expertise and noise analysis under RNAV paths using alternative metrics (N65 or N70). To then help us present these options with their support to the FAA for consideration.

Note: We acknowledge that #3 & #4 are regional CAC issues but wanted to include them in what we are asking for.

33L Working Group (cont.)

- We agreed to the following:
  1. The focus should be in **Alternatives**
  2. Approach Massport to see if they will work with the Working Group on exploring alternatives and present to the FAA.
  3. If it is determined that the request needs to come from Officials, then approach our Legislators together to make the request to Massport.
  4. Solicit a proposal for an Aviation Consultant that could work with us on evaluating and proposing alternatives.

Flight Path Analysis

Pre-33L RNAV SID and Post-33L RNAV SID

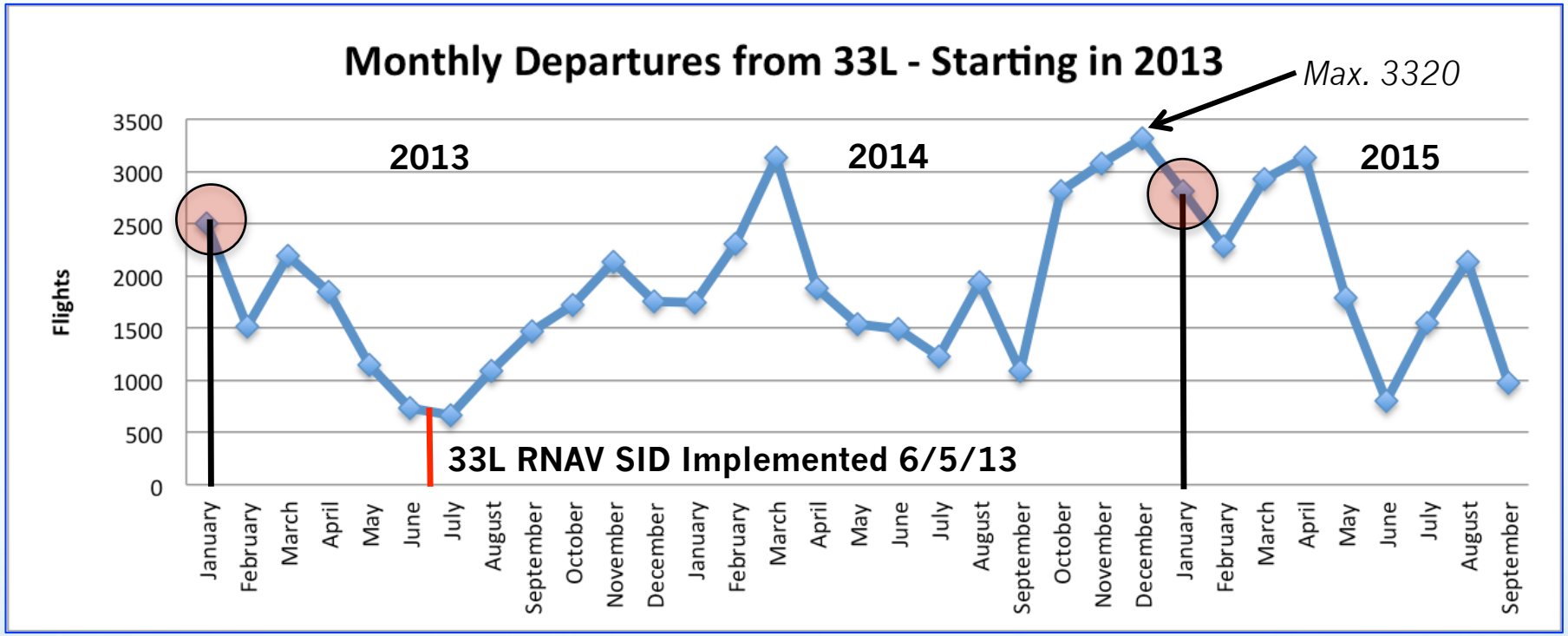
33L Departures

- Runway 33L is one of the longest runways at BOS and is used in NW wind configurations. It is very seasonal – with the heaviest use from October-March.
- Runways 27 & 33L are typically used in tandem with NW winds
- Thru September 2015, there were 18,393 departures from 33L, YTD – 33L has been used for 15.6% of all departures.
- January 2015 was the busiest month for 33L departures with 2,816 operations representing 25.8% of all departures. The busiest day in '15, Jan 5th was 289 flights departing from 33L.
- Runway 33 was closed in the summer of 2011 and 2012 for safety improvements related to the national RSA (Runway Safety Area) initiative. This added a safety area to the runway but did not affect how the runway was or is used but did result in reduced annual volume for 33L departures in 2011 and 2012 before 33L RNAV SID was implemented.
- In 2014, 33L was used for 25,546 departures or 17.1%. This is almost identical to its level of use in 2010 before the RSA construction closure.

Methodology

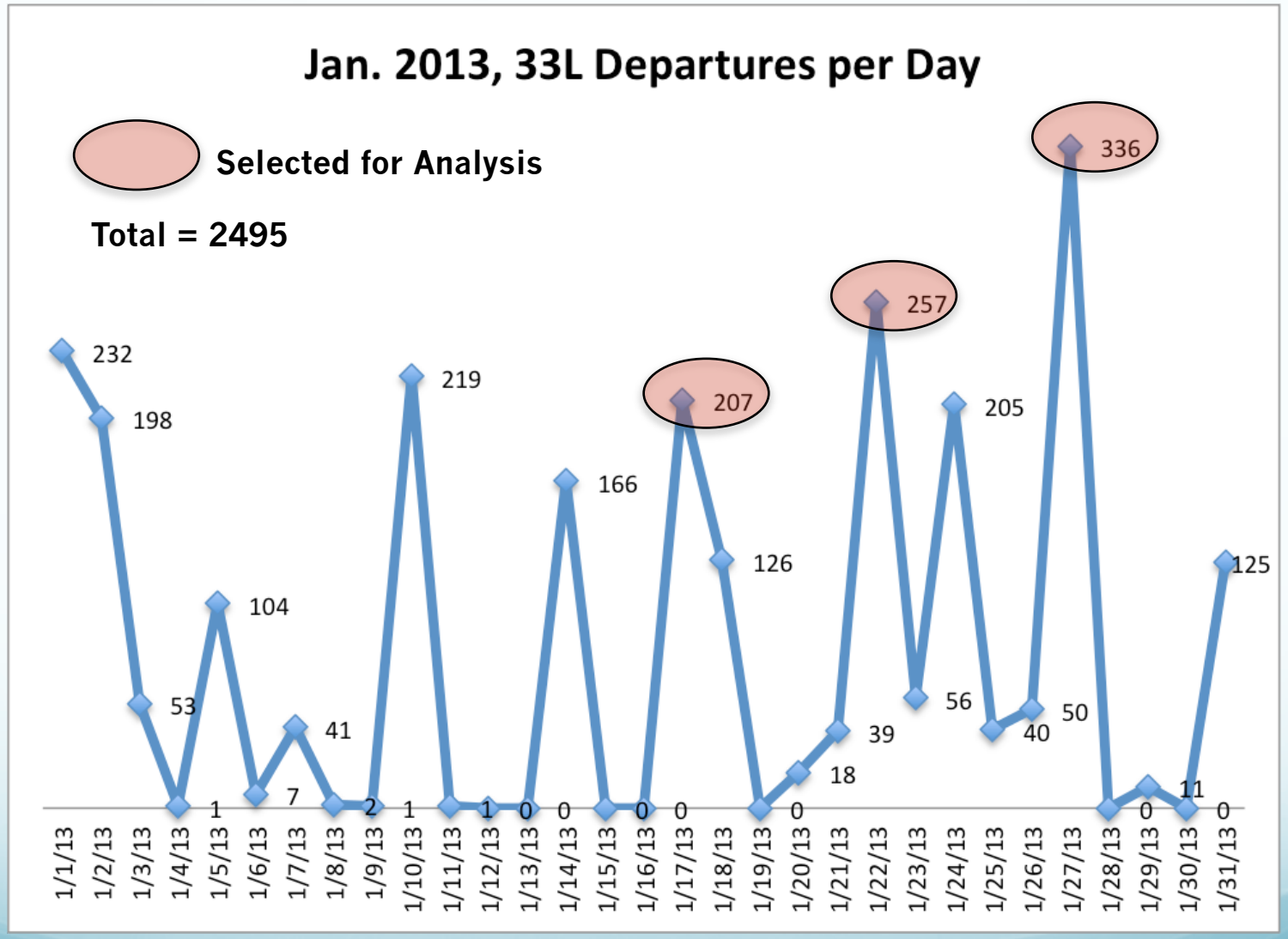
- We looked at 33L use from Massport Runway Use data and selected a month with heavy-use of 33L for departures before 33L RNAV SID was implemented and after 33L RNAV SID was implemented.
- Though there were no exact matches, we selected January 2013 and January 2015.
- We requested and received flight logs (flight, day and time) from Massport for these two months for 33L departures.

33L Monthly Use

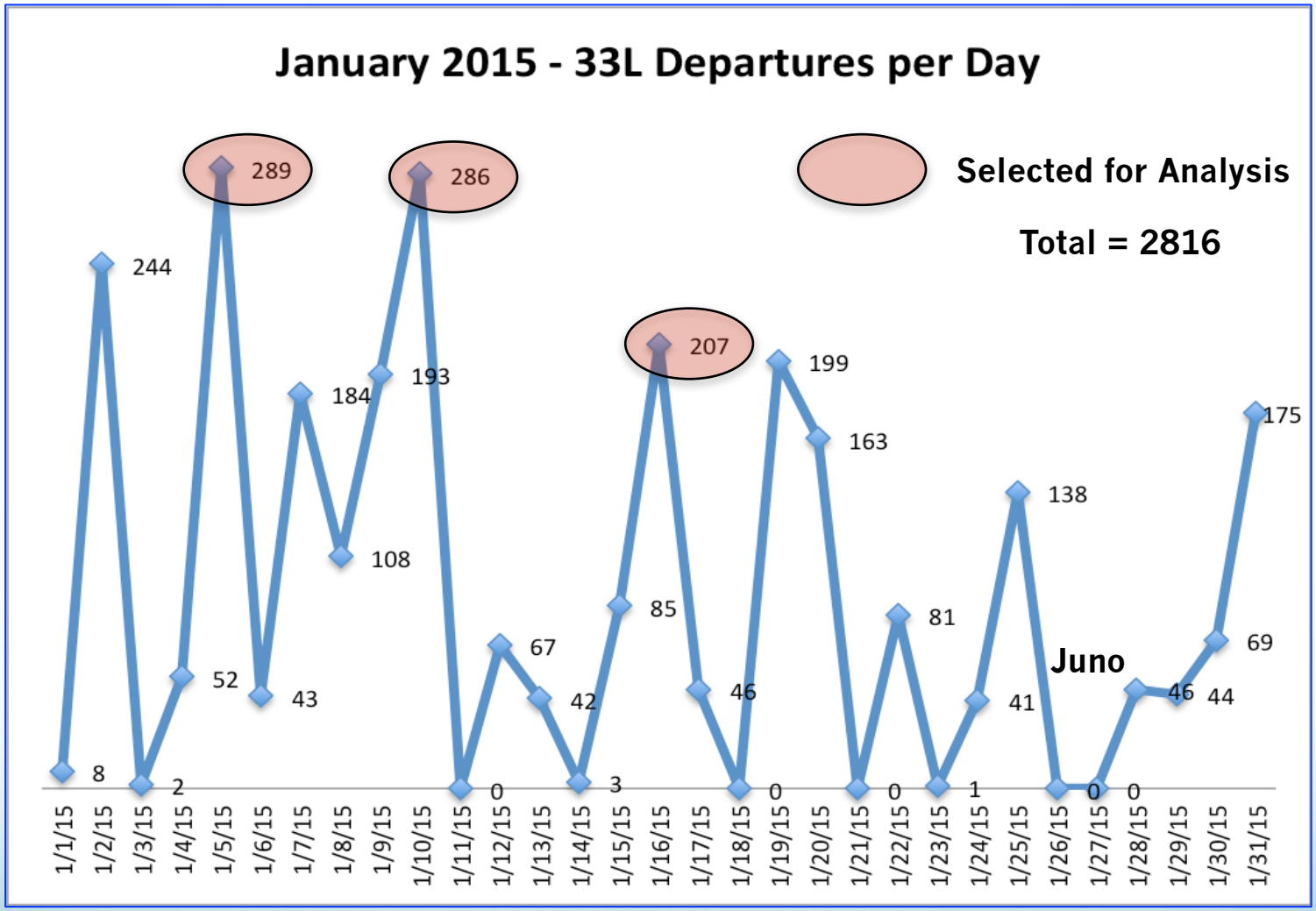


January 2013 and January 2015 were selected because they has approximately the same flight volume and represented before and after RNAV samples

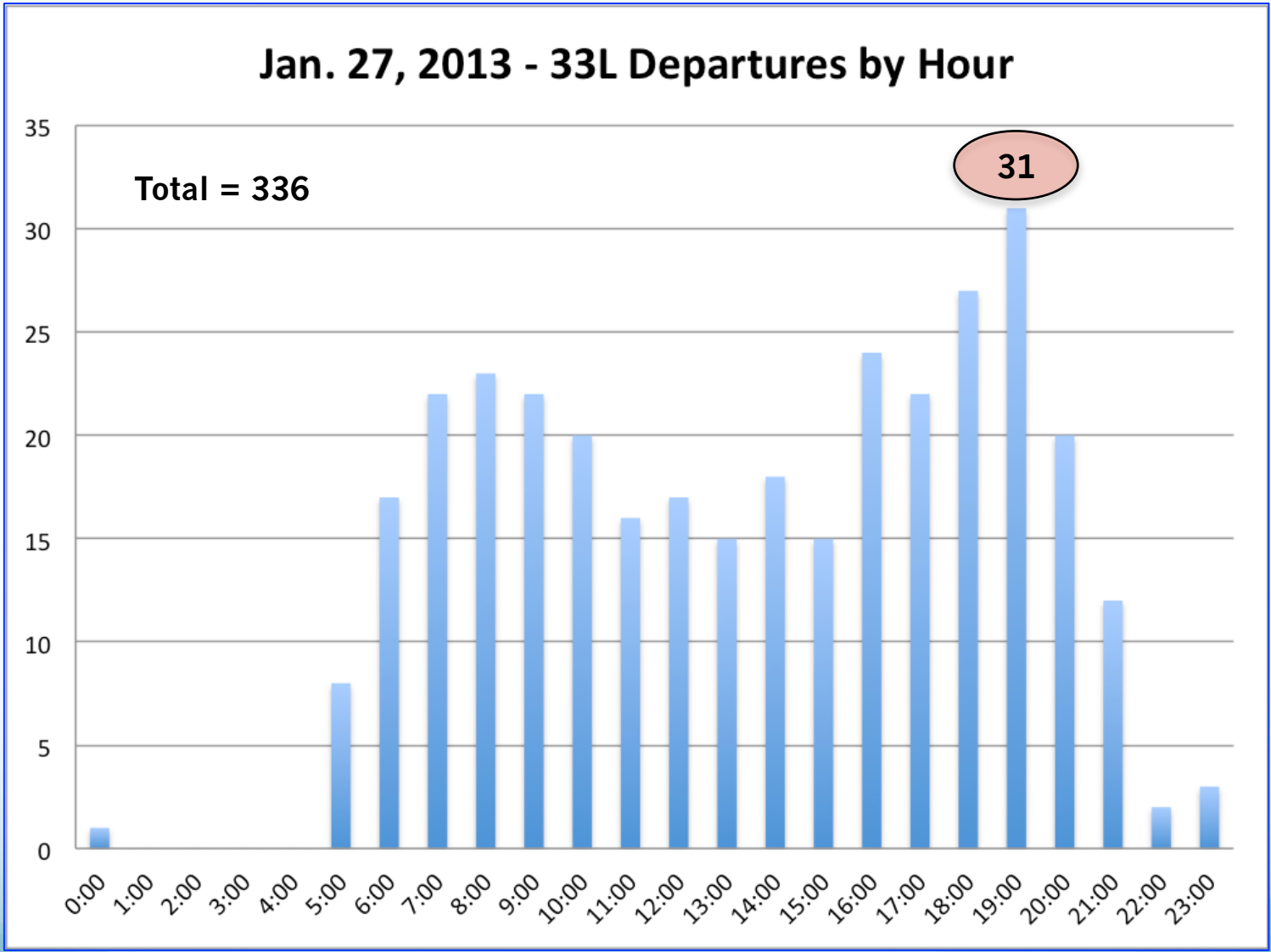
A closer look



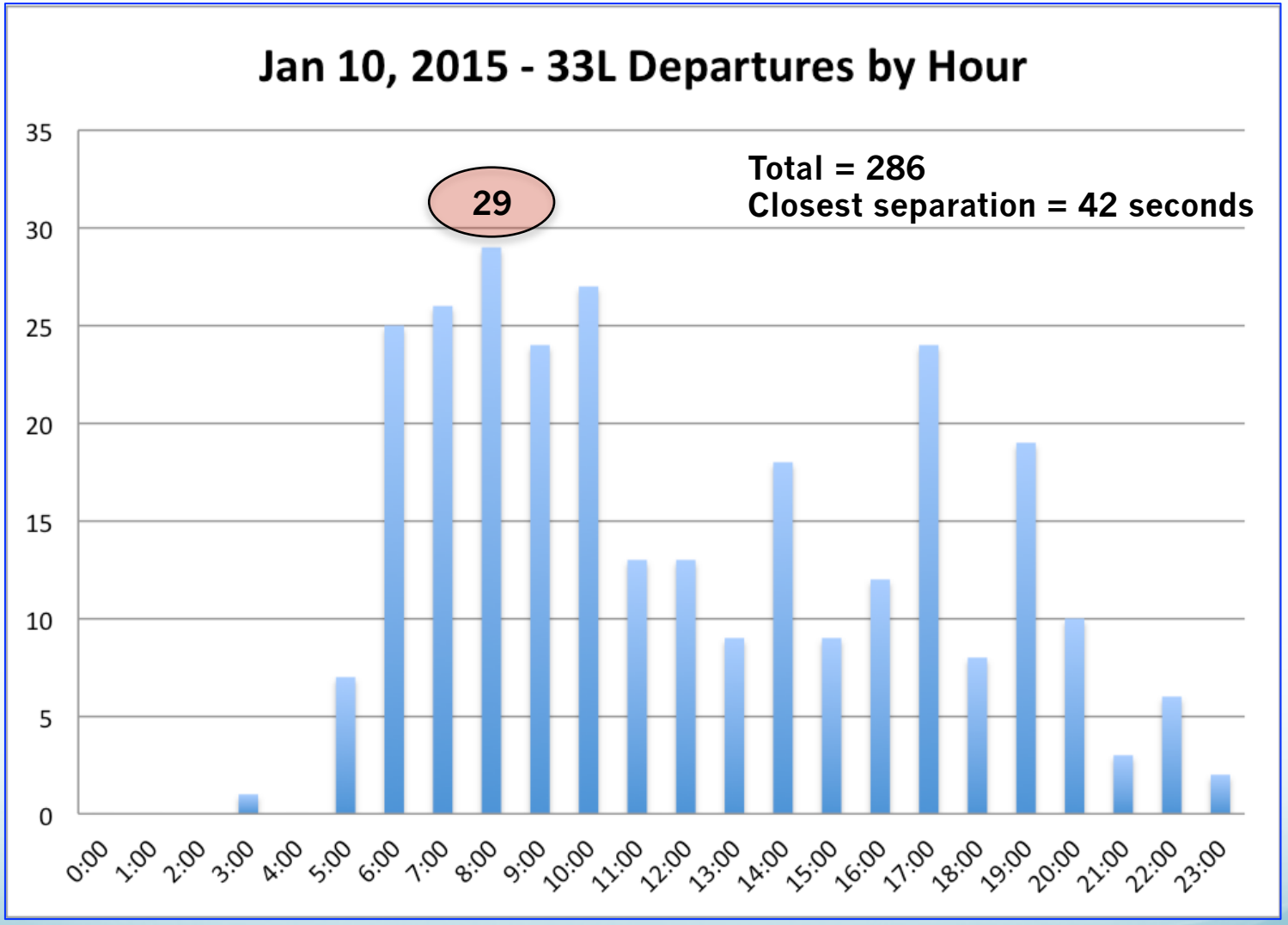
A closer look



Heavy Use Day



Heavy Use Day



Flight Paths

Where did they fly(pre-RNAV) and where do they fly (post-RNAV)?

Methodology

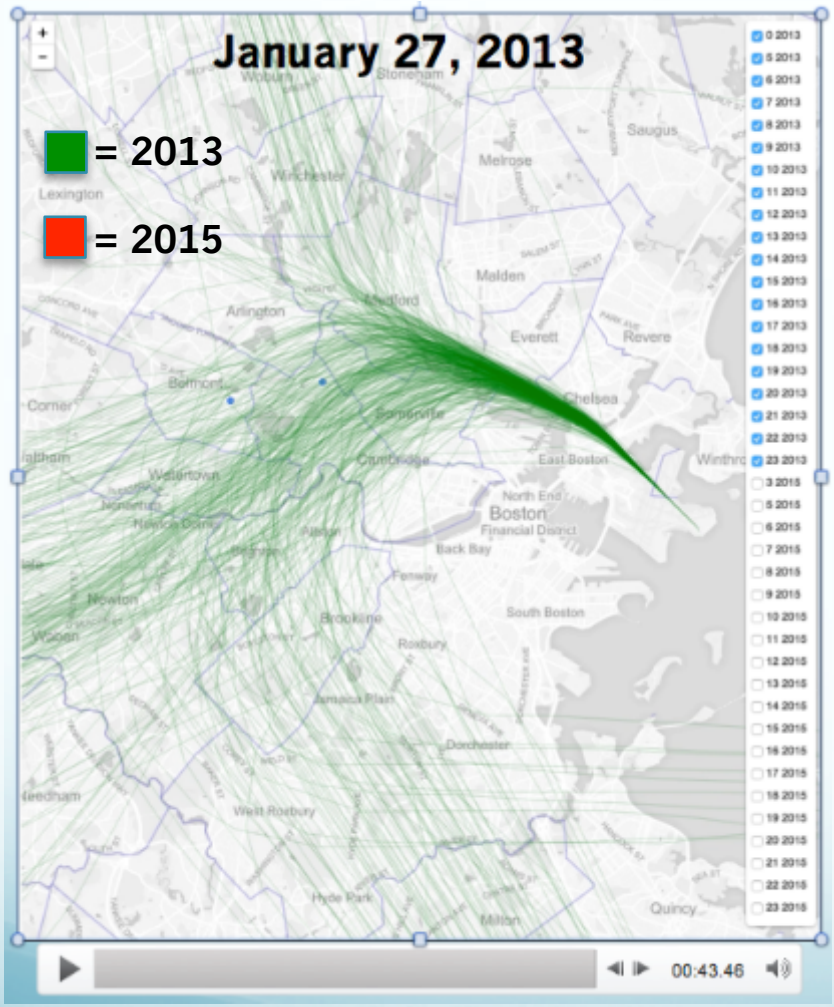
- Requested flight path data from Massport for three days in January 2013 (pre-RNAV) and three days in January 2015 (post-RNAV) when 33L had a high number of departures:

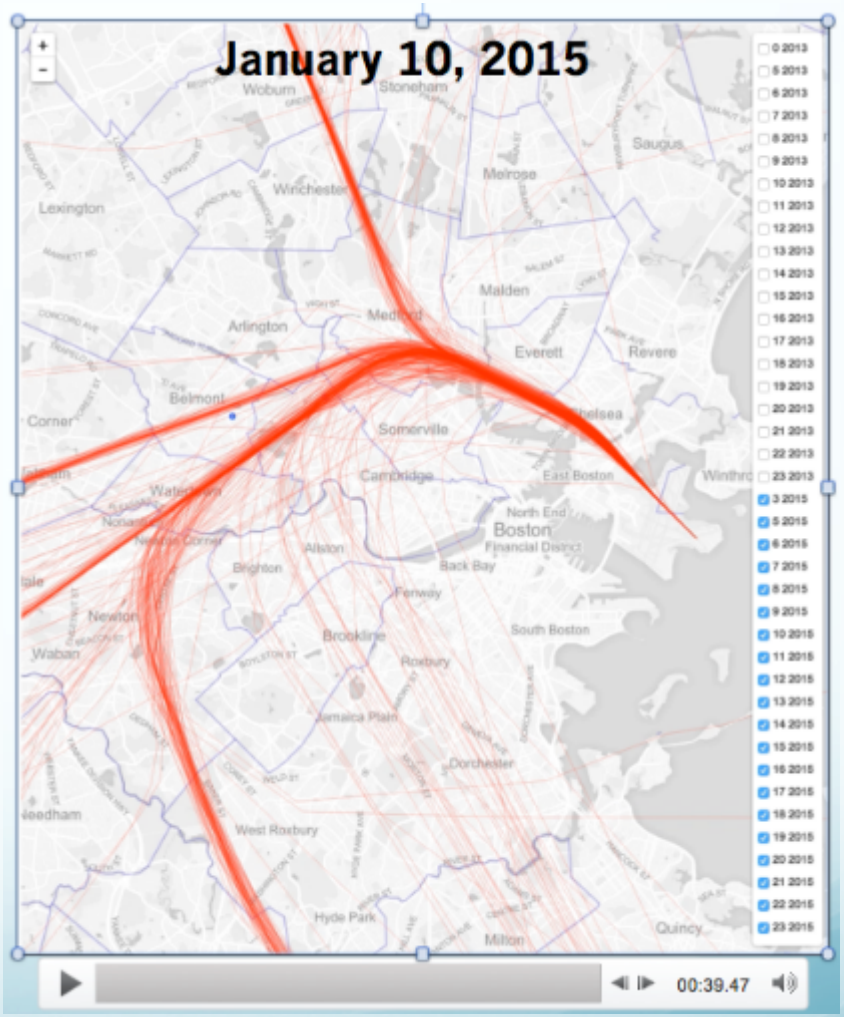
2013		2015	
Date:	Flights	Date:	Flights
January 17th	207	January 5th	289
January 22nd	257	January 10th	286
January 27th	336	January 16th	207
Total	870	Total	782

** Disclaimer **

- Flight track data for 2015 is “raw” from Massport – has not been through their normal scrubbing and review.
- This is a very small 3-day sample designed to be **illustrative** – likely not representative of all days, months or seasons. It is risky drawing too many definitive conclusions from these samples. More data is being requested for 2015.
- We are doing the analysis using volunteer resources – we are not aviation or noise experts but believe the information to be correct.
- The analysis was presented to Massport for comment and review prior to publication.
- The analysis and calculations were done with the time and tools available and may contain errors.

What we found….

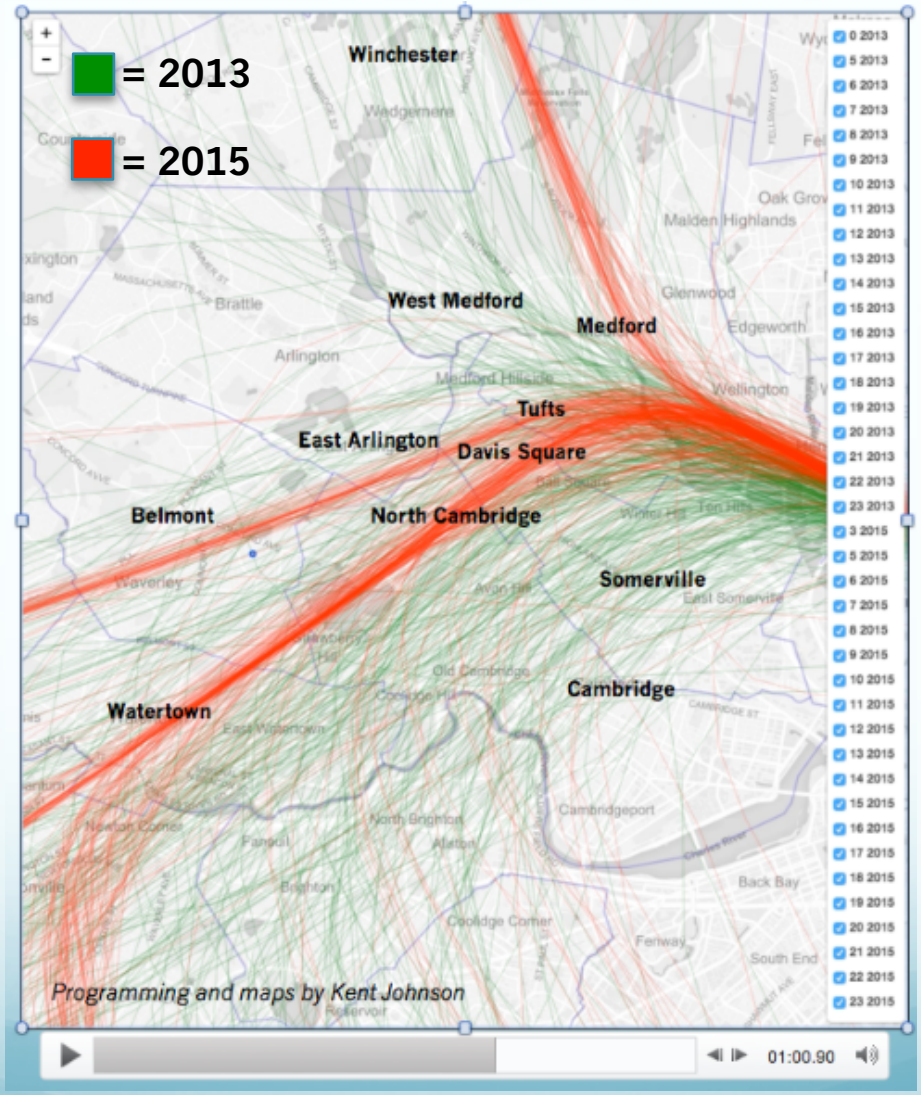




Note: these are screen grabs of video animations

Programming and maps by Kent Johnson

Zoom-in on our Communities



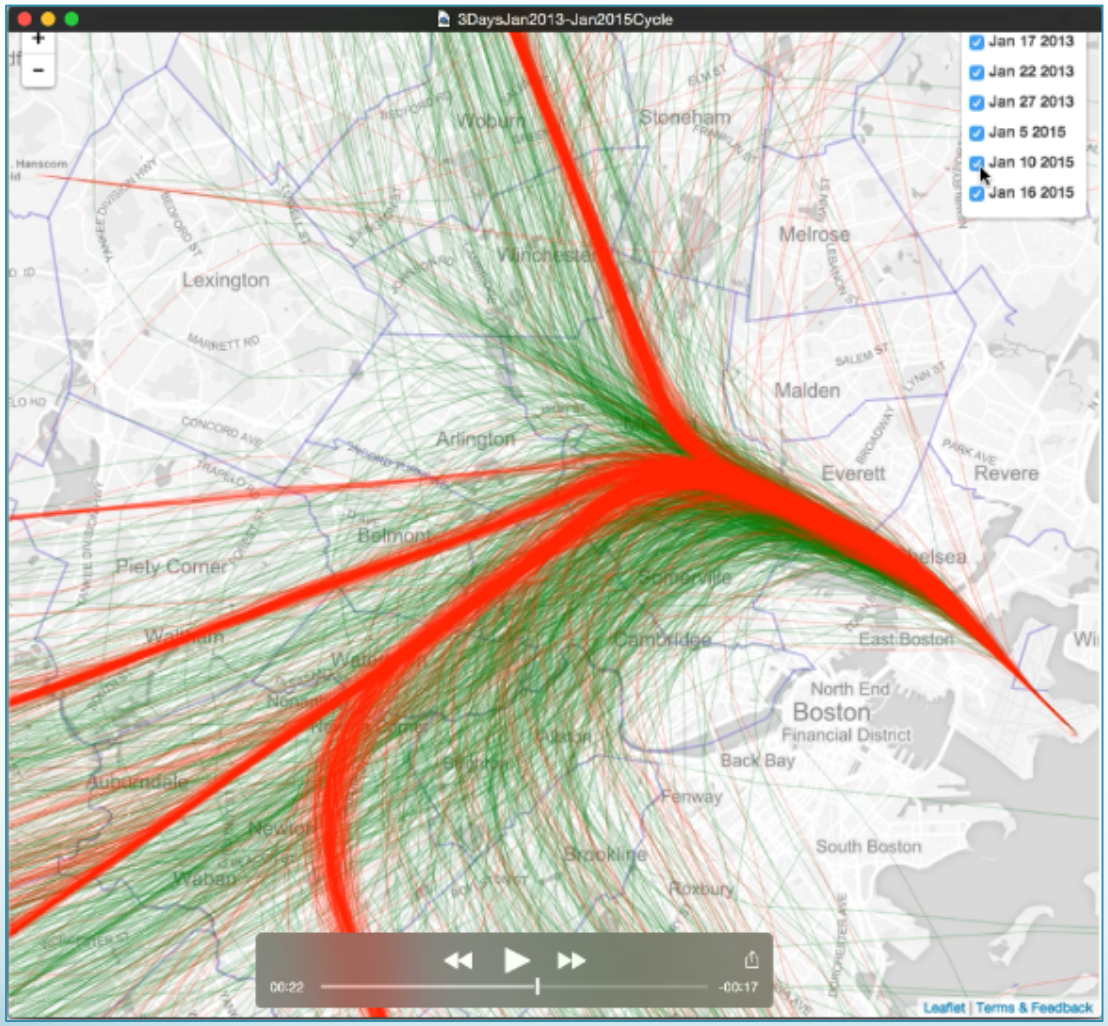
Note: this is a screen grab of video animations

Note: this graphic compares the flight tracks of 33L departures from the one sample day in January of 2013 (shown in green) and one sample day in January of 2015 (shown in red).

It clearly illustrates the wide distribution of flight paths under the prior radar procedure (Logan Six) and the results of the concentration of the RNAV flight paths implemented with 33L RNAV SID over specific neighborhoods and sections of communities.

Programming and maps by Kent Johnson

All 6 days overlay



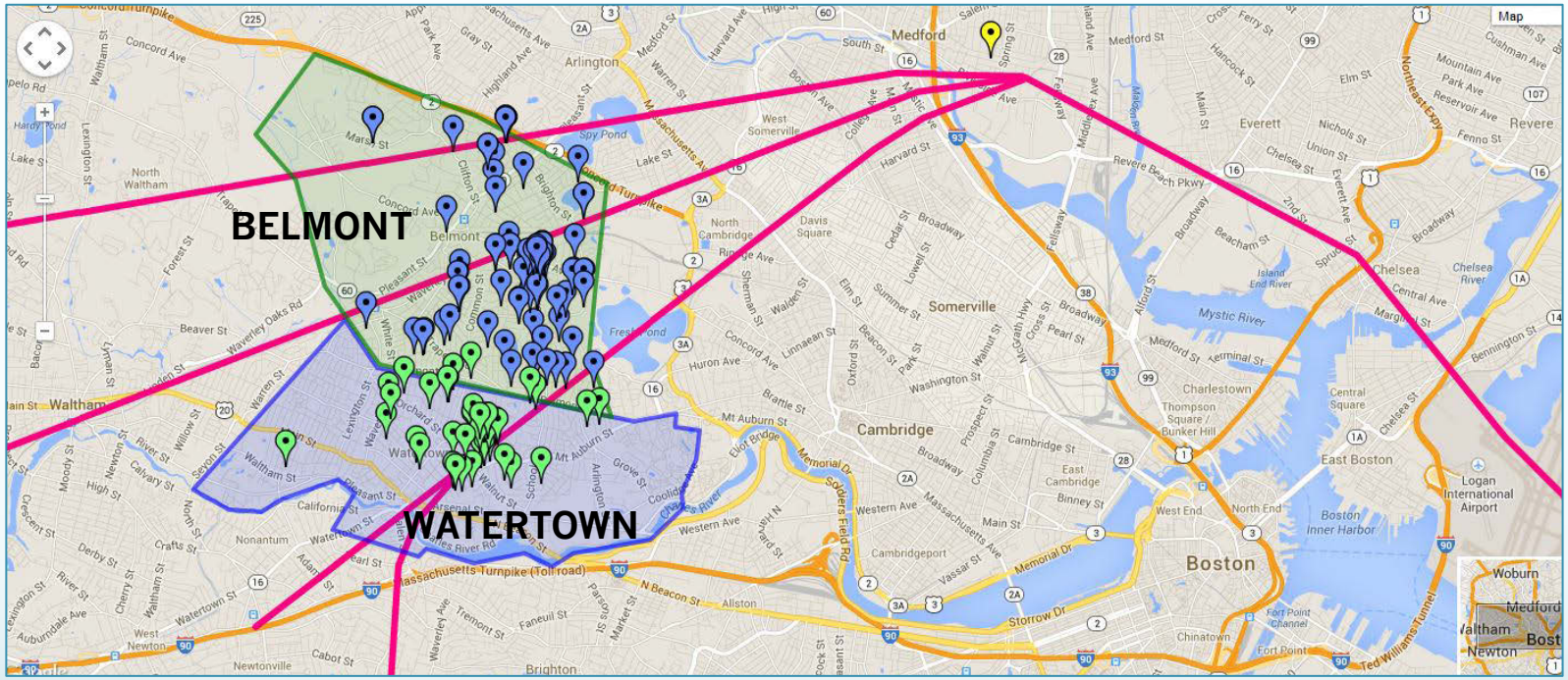
Note: this graphic compares the flight tracks of 33L departures from all three sample days in January of 2013 (shown in green) and all three sample days in January of 2015 (shown in red).

Prior analysis of the location of complaints from Belmont and Watertown (on next slide) clearly shows the correlation between RNAV and complaints.

Note: this is a screen grab of a video animation

Location of Complaints & RNAV

Noise complaints to Massport are coming from neighborhoods under or in between new 33L RNAV SID flight paths

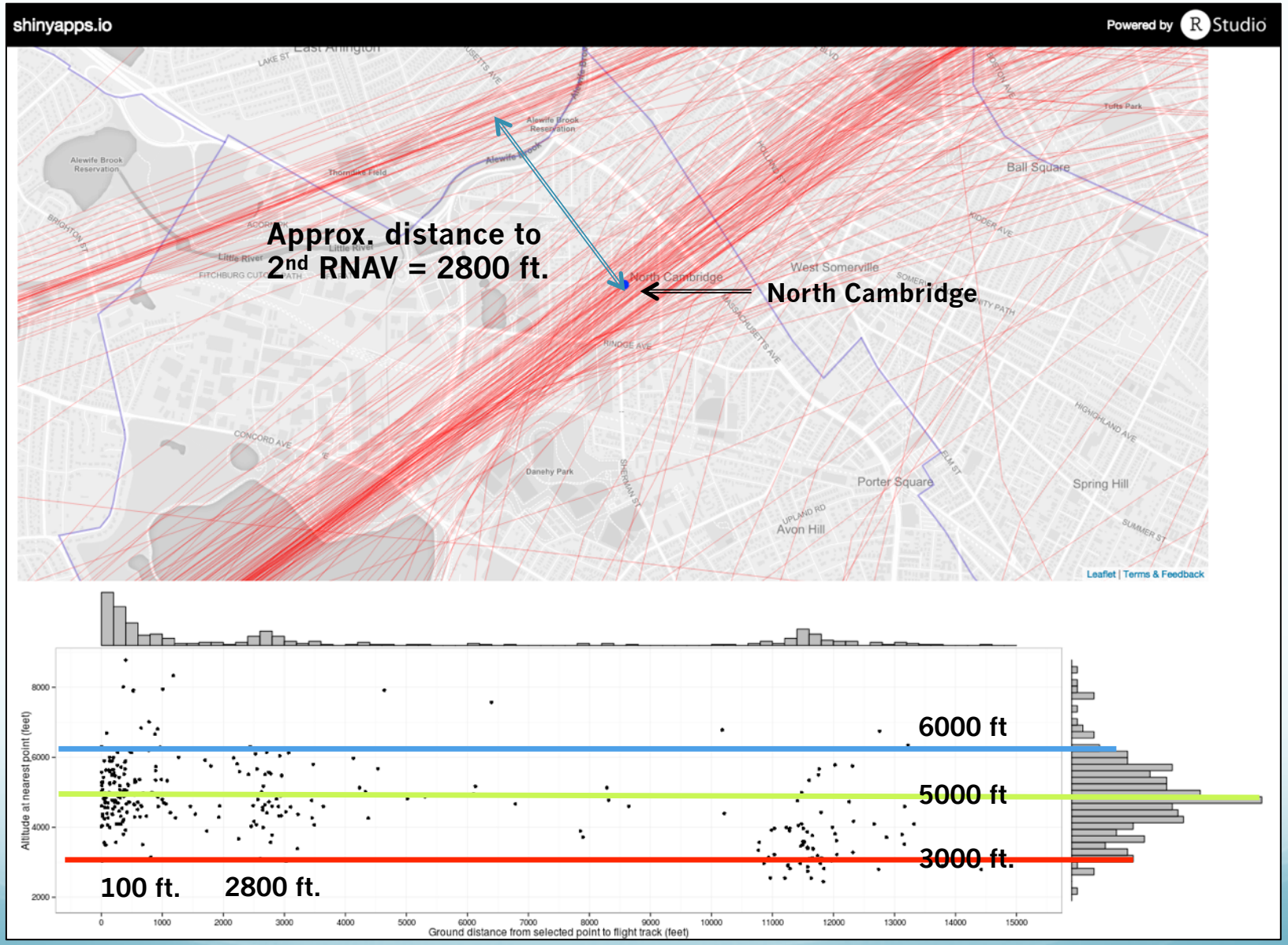


Based on complaint data received from Massport filed by Belmont and Watertown residents for the month of January 2014. Pins represent unique addresses that have filed at least one complaint. RNAV paths shown are approximate.

Methodology

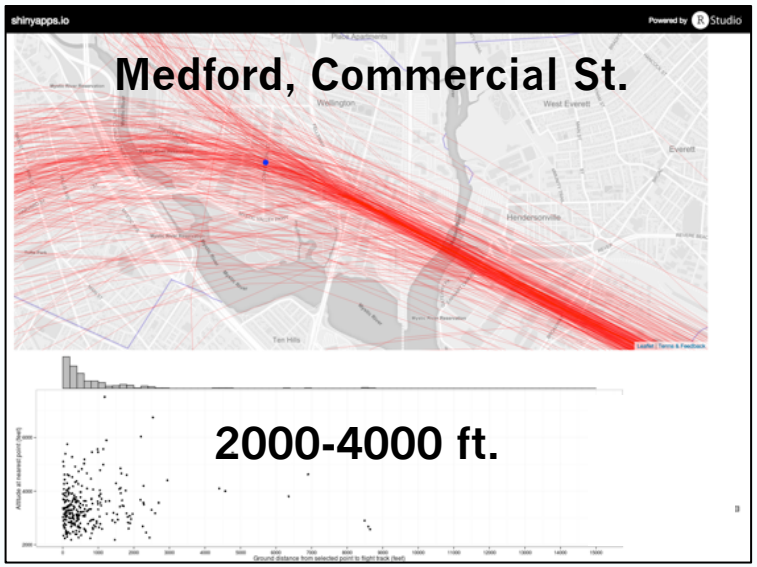
- Kent Johnson (N. Cambridge – BWFS Member) developed an analysis tool whereby a point could be selected on the map and the data from all six days would be analyzed by year.
- This enables detailed comparisons of flight volumes and altitudes at any address from these six sample days.
- We do not know how representative these days were but they provide a powerful illustration of the difference in flight volumes being experienced by certain communities and neighborhoods that have been complaining about the impact of 33L RNAV SID since it was implemented in June of 2013.
- Next steps are to incorporate census tract/block data and also to do further analysis of path by destination and altitude by aircraft type.

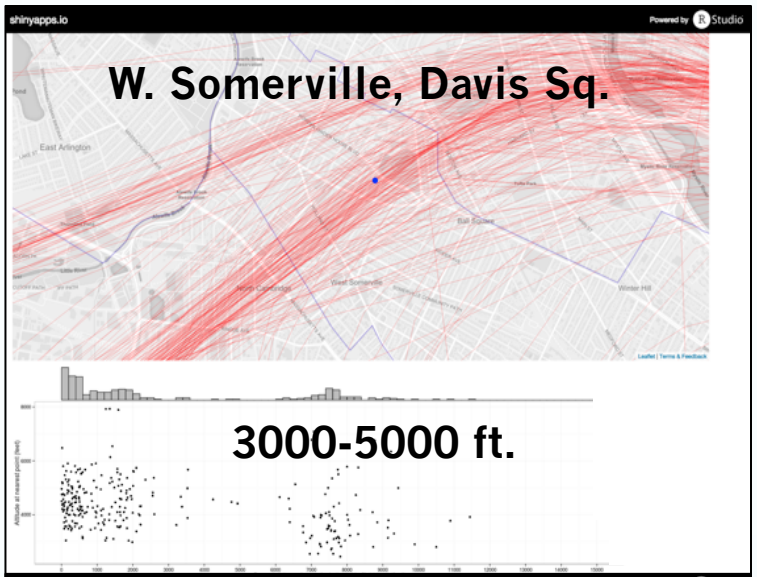
How High and How Many?

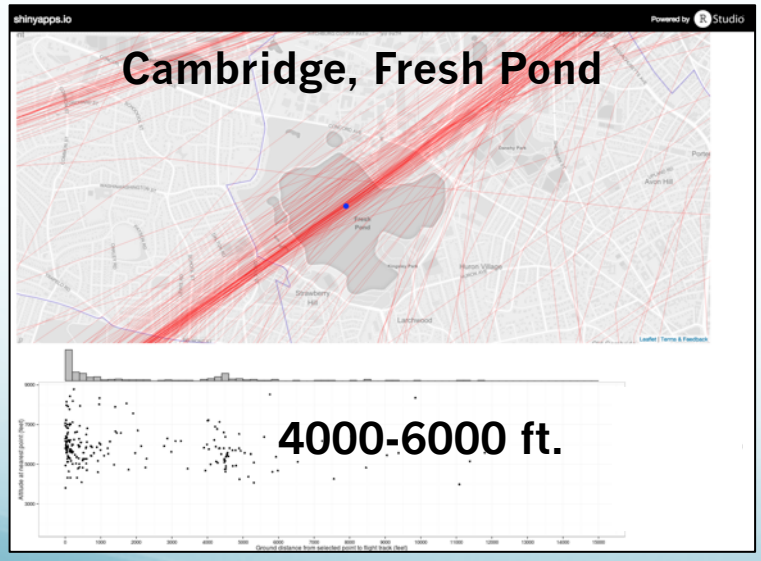


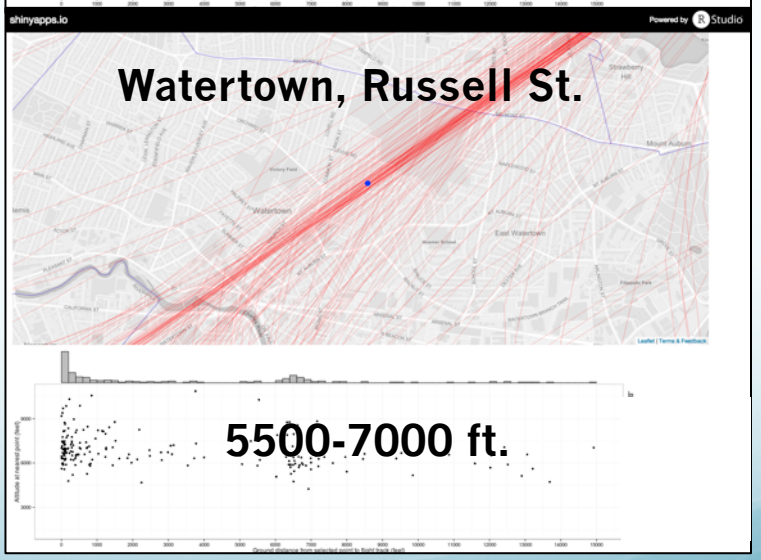
Programming and maps by Kent Johnson

How High are the flights?



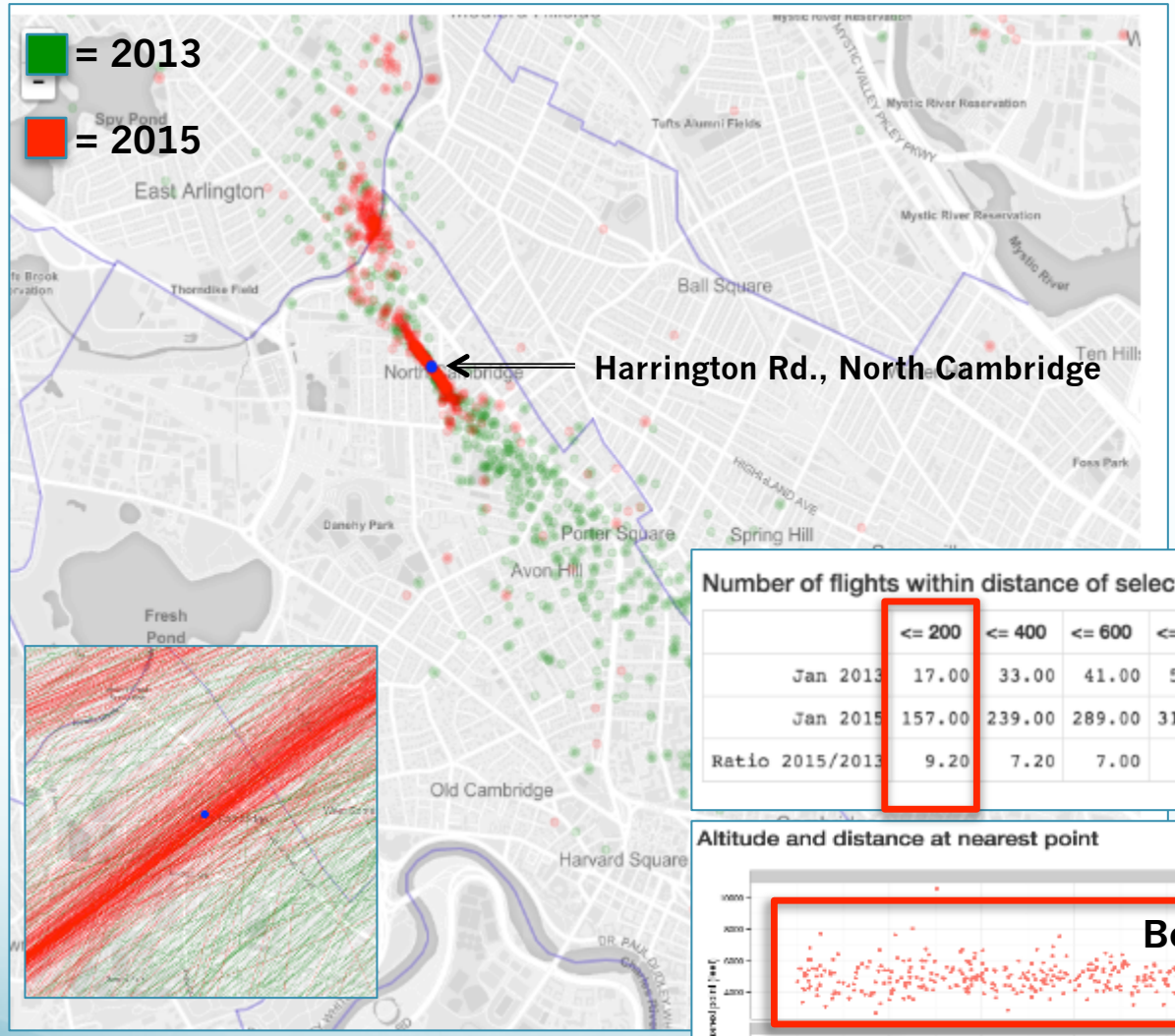






Programming and maps by Kent Johnson

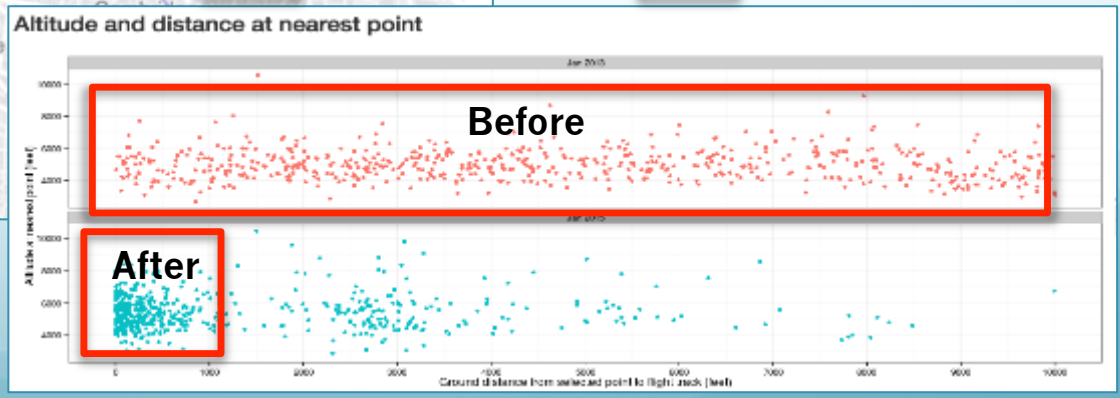
How many flights?



North Cambridge went from 81 flights in 2013 w/in 1200 ft. (~¼ mile) to 342 in 2015 and from 17 to 157 directly overhead (200 ft.), **almost 10x**.

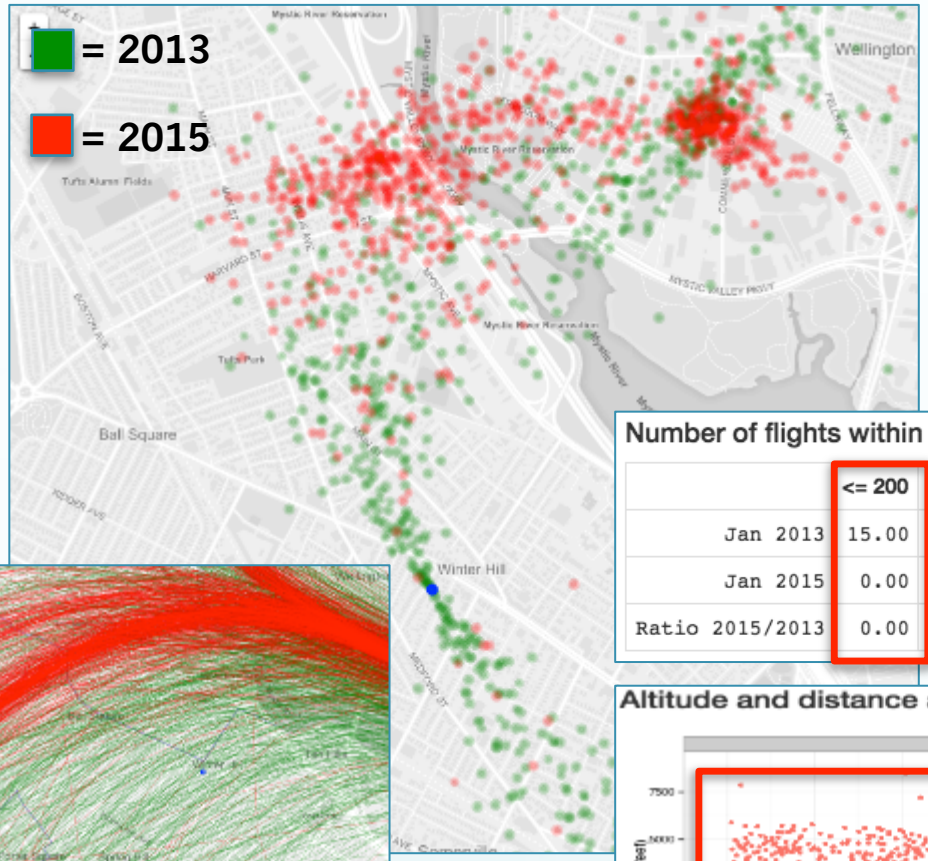
Number of flights within distance of selected point

	<= 200	<= 400	<= 600	<= 800	<= 1000	<= 1200	<= 1400	<= 1600	<= 1800	<= 2000
Jan 2013	17.00	33.00	41.00	52.00	66.00	81.00	99.00	110.00	122.00	147.00
Jan 2015	157.00	239.00	289.00	317.00	329.00	342.00	348.00	350.00	354.00	362.00
Ratio 2015/2013	9.20	7.20	7.00	6.10	5.00	4.20	3.50	3.20	2.90	2.50



Programming and maps by Kent Johnson

Some have a lot less

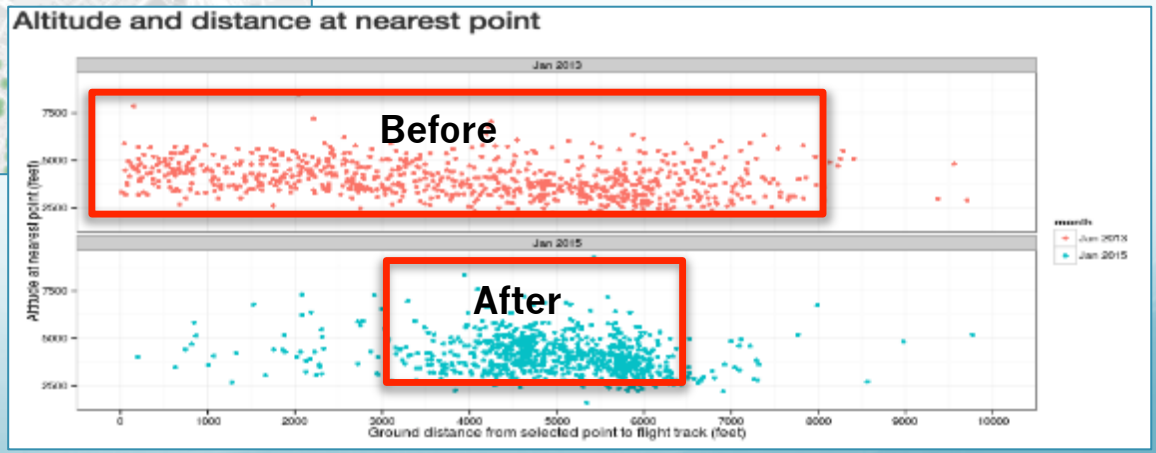


Winter Hill in Somerville went from 15 to 0 directly overhead and 109 flights in 2013 w/in ~1/4 mile to 9 in 2015 – that's **more than a 10x fewer**.

Number of flights within distance of selected point

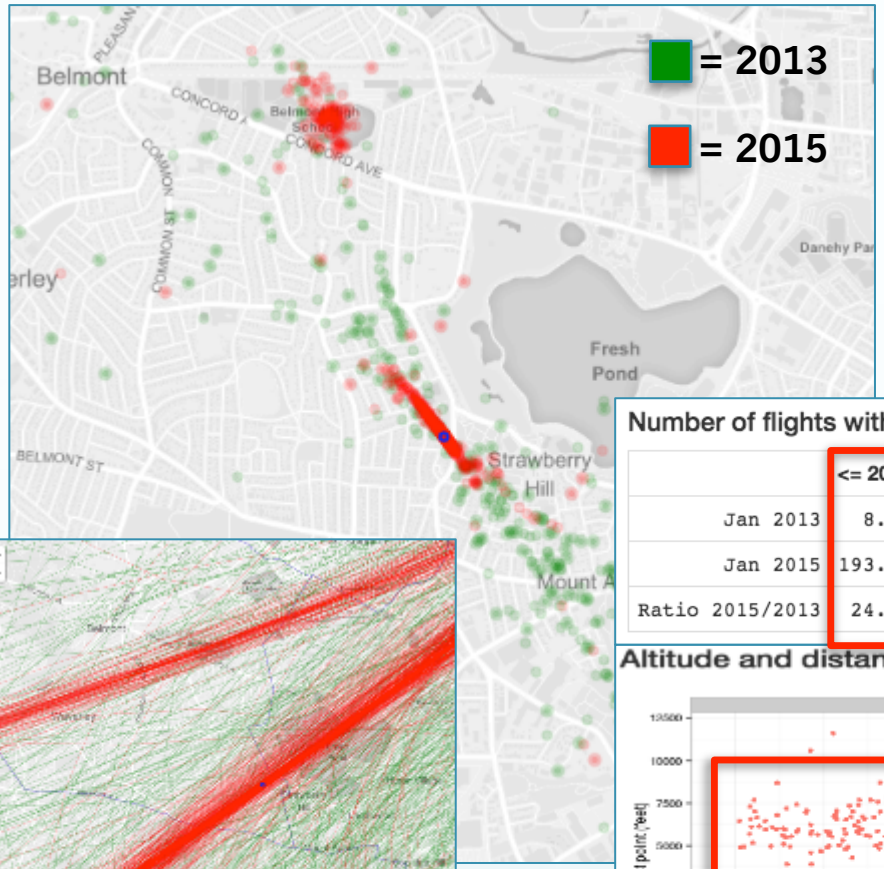
	<= 200	<= 400	<= 600	<= 800	<= 1000	<= 1200	<= 1400	<= 1600	<= 1800	<= 2000
Jan 2013	15.00	36.00	60.00	75.00	95.00	109.00	123.00	141.00	164.00	182.00
Jan 2015	0.00	0.00	2.00	4.00	6.00	9.00	11.00	11.00	13.00	16.00
Ratio 2015/2013	0.00	0.00	0.03	0.05	0.06	0.08	0.09	0.08	0.08	0.09

Altitude and distance at nearest point



Programming and maps by Kent Johnson

Some have a lot more

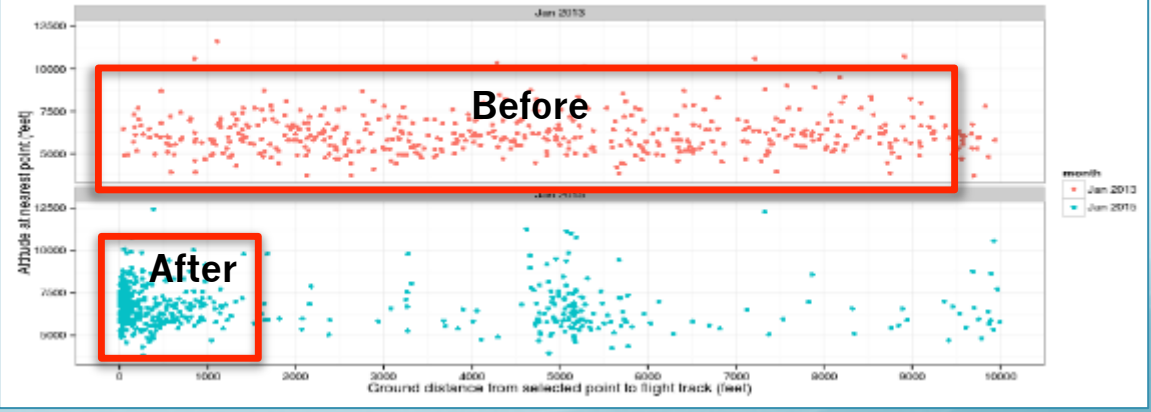


Belmont - southwest of Fresh Pond went from 55 flights in 2013 w/in 1200 ft. (~¼ mile) to 330 in 2015 and from 8 to 193 directly overhead. **That is a 24x increase**.

Number of flights within distance of selected point

	<= 200	<= 400	<= 600	<= 800	<= 1000	<= 1200	<= 1400	<= 1600	<= 1800	<= 2000
Jan 2013	8.00	14.00	27.00	32.00	43.00	55.00	69.00	80.00	93.00	104.00
Jan 2015	193.00	245.00	278.00	300.00	320.00	330.00	336.00	338.00	343.00	344.00
Ratio 2015/2013	24.10	17.50	10.30	9.40	7.40	6.00	4.90	4.20	3.70	3.30

Altitude and distance at nearest point

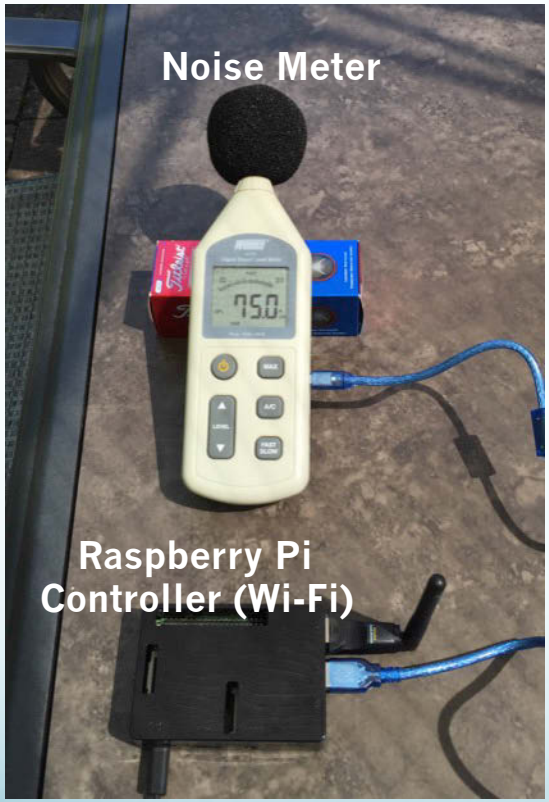


Programming and maps by Kent Johnson

How much noise?

Citizen Noise Monitors

A way to try to quantify the noise being experienced by residents and to collect noise samples from multiple locations. Working with others in Santa Cruz, CA and Minneapolis-St. Paul to evaluate alternatives. See: https://skyote.com/noise/index.php



What we have learned:

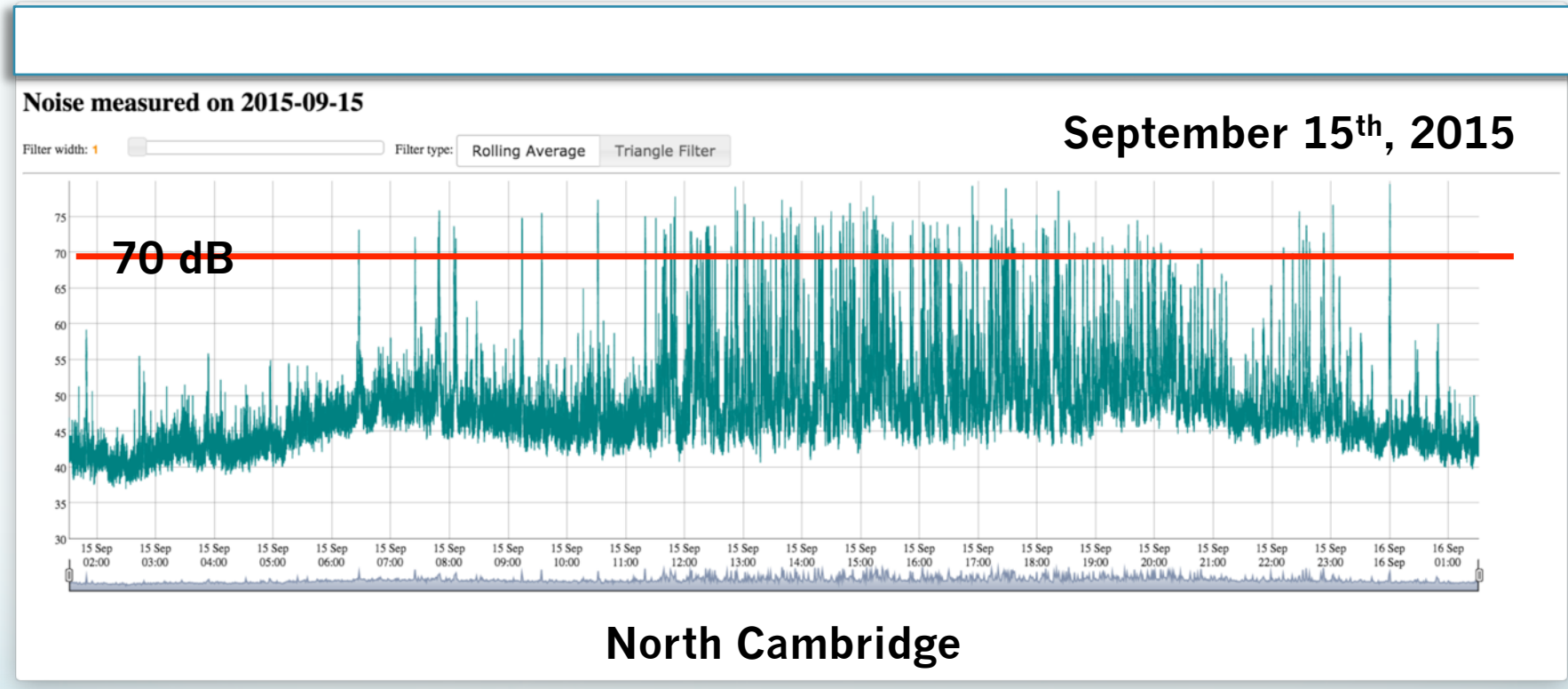
- **Inexpensive noise meters can be inaccurate**
- **Smartphone apps are not designed for measuring outdoor environmental noise**
- **Measuring environmental noise from airplanes is hard and requires professional equipment and expertise**

We have been able to collect some data and it is illustrative of the problem.

BWFS is investing in a NIST-calibrated meter and calibrator ($1000) to try to improve accuracy.

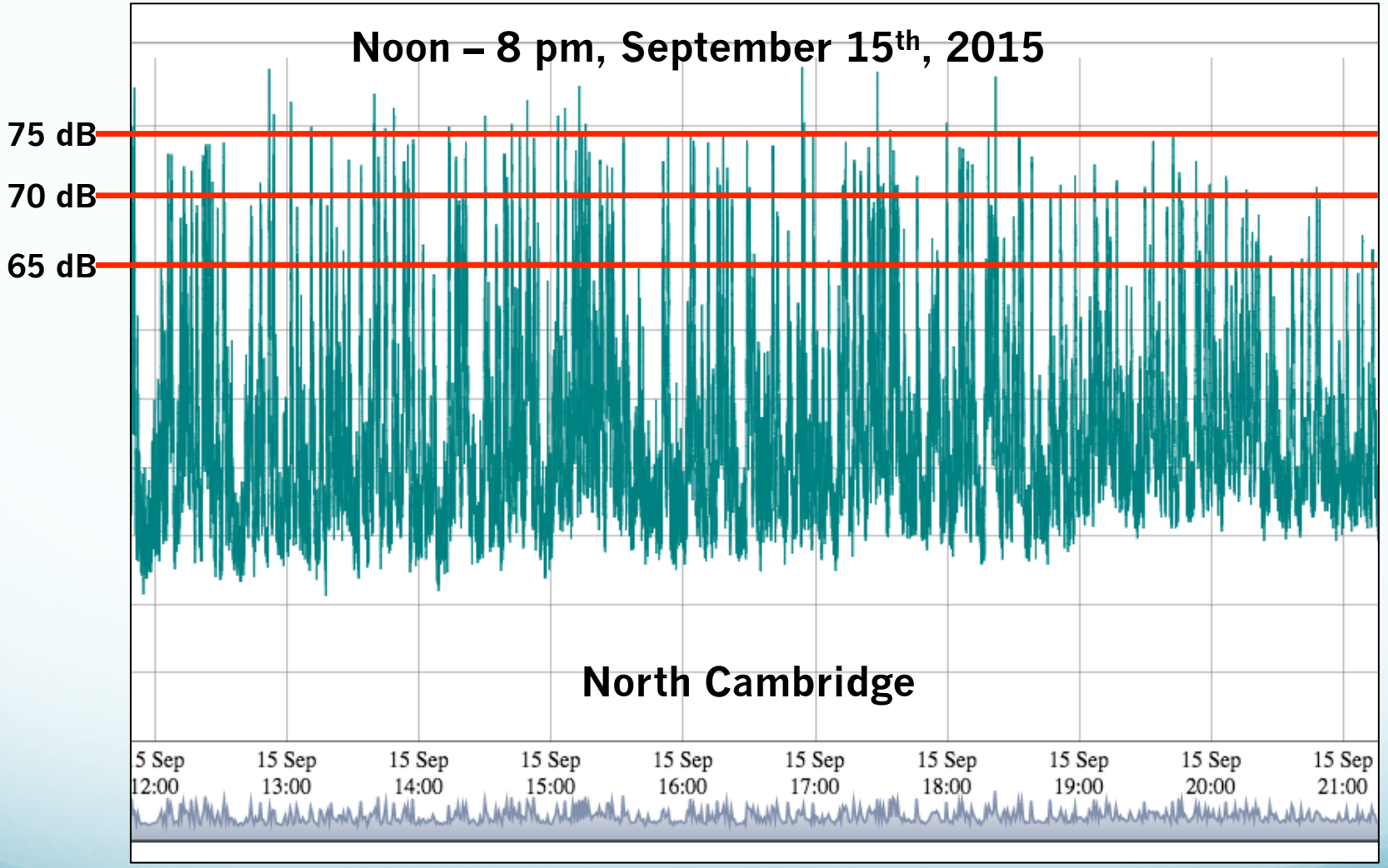
For credible noise measurement, you really need professional equipment and an experienced consultant.

A day in the life……



Note: intended for illustration purposes – un-calibrated noise meter and more work needs to be done to match noise event to actual flights.

8 hrs. on a bad day



Note: intended for illustration purposes – un-calibrated noise meter and more work needs to be done to match noise events to flights.

This is just a sample

- This data and analysis is **illustrative** of the problem. We don't know how representative the 3 days we sampled are.
- We are still studying the relationship of altitude and aircraft type to noise as well as the relationship of distance from a flight path or geography to noise.
- To have a more complete picture we need:
  - More data –we are now pursuing samples from a range of months for days with heavy 33L departures.
  - Noise samples from multiple locations under the RNAV paths and away from the paths using professional equipment.
  - Expertise in analyzing the noise measurements and flight information to see what could be done to improve the situation.

Summary

- Even though many of these communities are 5, 6, 8 miles from Logan – what had been a non-issue under radar-based navigation (Logan Six) has now become a significant issue for those to whom the flights have been shifted and concentrated by 33L RNAV SID.
- There are neighborhoods that are getting 5-10 times more flights directly overhead and 15-24 times more flights within 1200 ft.
- Initial sampling data shows a large number of those flights to be generating noise in excess of 65 dB.
- Communities like Medford have four RNAV flight paths from 33L departures and Somerville and Belmont each have three.
- The FAA's analysis of 33L RNAV showed that this did not constitute a "significant impact".
- This level of increase if flight volume because of the concentration has changed the character of neighborhoods and communities and created significant distress for many residents living under these new flight paths.

Summary (cont.)

- We made the FAA aware of our concerns almost immediately after implementation of 33L RNAV SID in June of 2013.
- We have been told by the FAA to wait for two post-implementation reviews (that did not look at noise complaints or community feedback). We were then directed to bring this up through the Logan CAC. In January 2015 a motion was made to the FAA requesting the 33L RNAV SID be re-examined in light of the massive increase in complaints and negative community feedback. The response was that we needed to take the issue of the flight paths up with the airport operator (Massport) to propose alternatives for consideration.
- The FAA has never met or communicated directly with the communities to discuss alternatives or modifications that could be made to the procedure.
- The 33L Working Group is collectively asking Massport to work with us on the potential for getting 33L departures higher faster and to see how greater dispersion could be introduced to more equally share the noise burden.

Belmont Logan CAC Page
http://bit.ly/Belmont-LoganCAC

Disclaimer: The views and opinions expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of any agency, committee or Town of Belmont, MA. Examples of analysis presented or performed within this article are only examples. Any questions or permission of duplication or use regarding this presentation or the information contained herein should be directed to the author.