East Hampton Airport Diversion Study

EAST HAMPTON COMMUNITY ALLIANCE

Garvett & Associates, LLC.

14 September 2021

Disclaimer

- Garvett & Associates used approaches consistent with established and accepted industry and government practices. These are modeling efforts designed to reflect user preferences as well as noise and emissions modeling. As such, we believe the modeling efforts herein are reliable, but necessarily are not guarantees or precise forecasts.
- In addition to sophisticated models, we relied on our own expert knowledge, public data sources, and inputs from East Hampton Community Alliance (EHCA) which we believe to be reliable, but cannot guarantee such.
- We are providing analyses on operational and related impacts of potential closure of HTO and are not rendering any judgment on the advisability of such.
- EHCA and other parties relying on these materials are solely responsible for any use made of these materials. Neither Garvett nor its associates (GRA) control the use made of our work and therefore, disclaim responsibility for such.

If East Hampton Airport (HTO) is closed:

HTO flights redistribute

An estimated 95% of existing HTO operations would relocate to other airports
45% Montauk; 32% Gabreski; 18% other airports

5.5% would no longer operate

Ground travel more than doubles

Vehicle-hours linked to existing HTO passengers would increase by 103%

Vehicle-miles would increase by 185%

Noise / emissions redistribute

East Hampton remains exposed to aircraft noise due to redistribution of flights

Potential significant noise impact* for Southampton Heliport & Montauk Airport

Additional vehicle-miles would increase total aircraft + ground vehicle emissions versus today by 1-2%

* Per FAA definition and noise model

HTO users are harmed

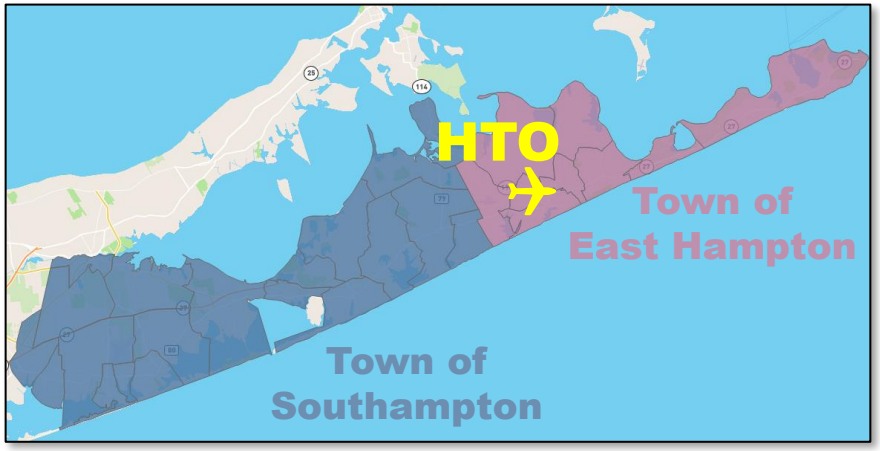
Current HTO users would face an average effective increase in total trip cost of 13% during the summer peak period and 10% off-peak

This study seeks to identify the likely impacts if the East Hampton Airport is closed

Study Focus	
	If East Hampton Airport is closed, what would happen to the people and aircraft currently using the airport?
	What are the likely noise and environmental consequences for East Hampton and nearby communities?

The **East Hampton Airport (HTO)** primarily serves the towns of East Hampton and Southampton

Some members of the community are seeking to **close the Airport** in an attempt to reduce aircraft noise and other environmental impacts



This study analyzes operational and related impacts of potential closure of HTO; it does not render any judgment on the advisability of such

Analysis relies on three models to assess impacts of potential HTO closure

Diversion Model

Projects effects of HTO closure on flights and passengers

Base case assesses where HTO's current users are located geographically

Scenario assesses what happens if HTO were closed; model considers continued likelihood of flying, geographic dispersion, and diverts users to alternative airports

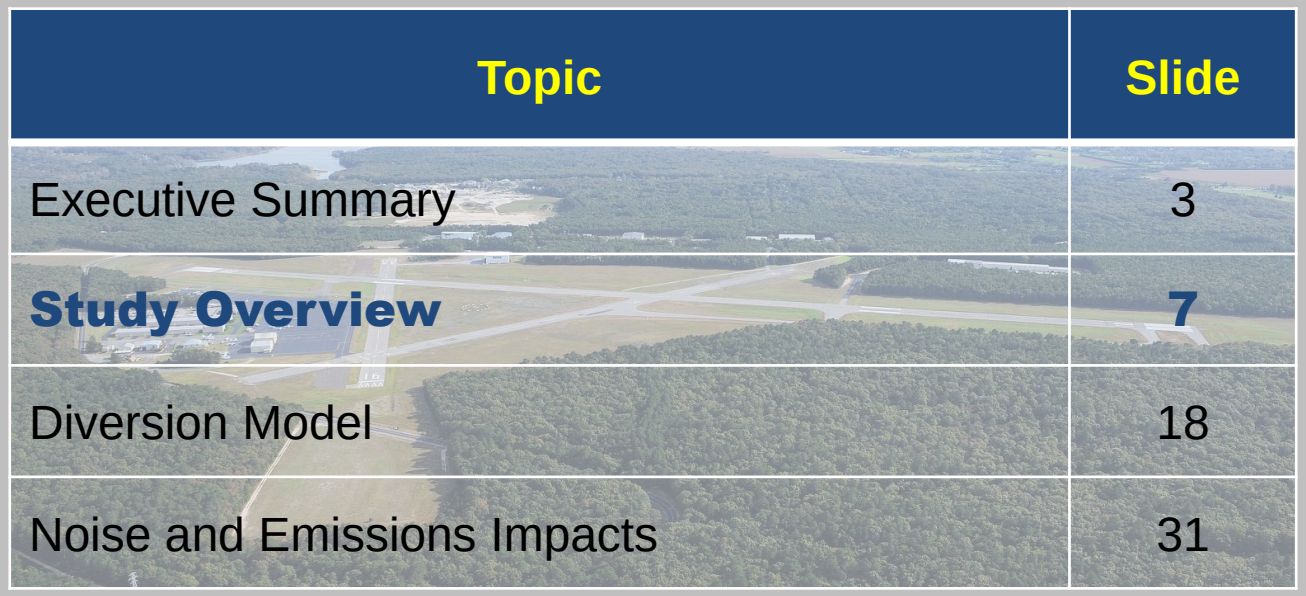
Diversion Model Results

Noise Model

FAA noise model used to assess impact of increased aircraft operations at alternative airports

Emissions Model

Industry greenhouse gas emissions model used to assess impact of increased aircraft operations at alternative airports and increased ground travel



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Air traffic at HTO peaks in the summer when the population in the Hamptons expands significantly

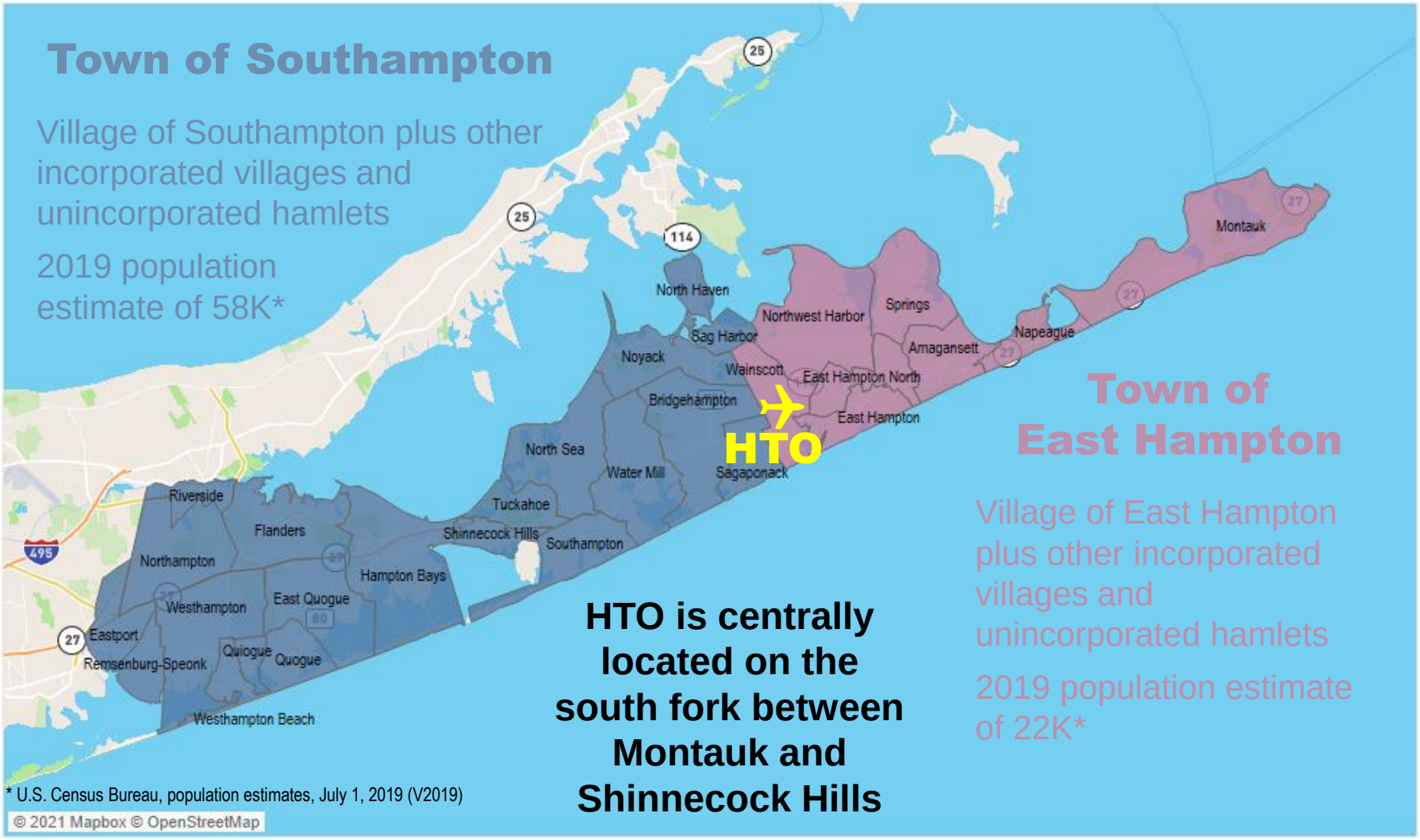
During the **summer, there is a significant increase** in aircraft operations at HTO (primarily from NYC)

- Commercial helicopters and seaplanes account for much of the increase

The area attracts individuals willing to **pay a premium to save time** and gain easy access to the Hamptons by air

Ground alternatives are a poor substitute for air travel for many individuals because they can save substantial amounts of time that they value highly by traveling by air

HTO is well located to serve much of East Hampton town and Southampton town



There are few viable substitutes for air travel to the Hamptons for many HTO users

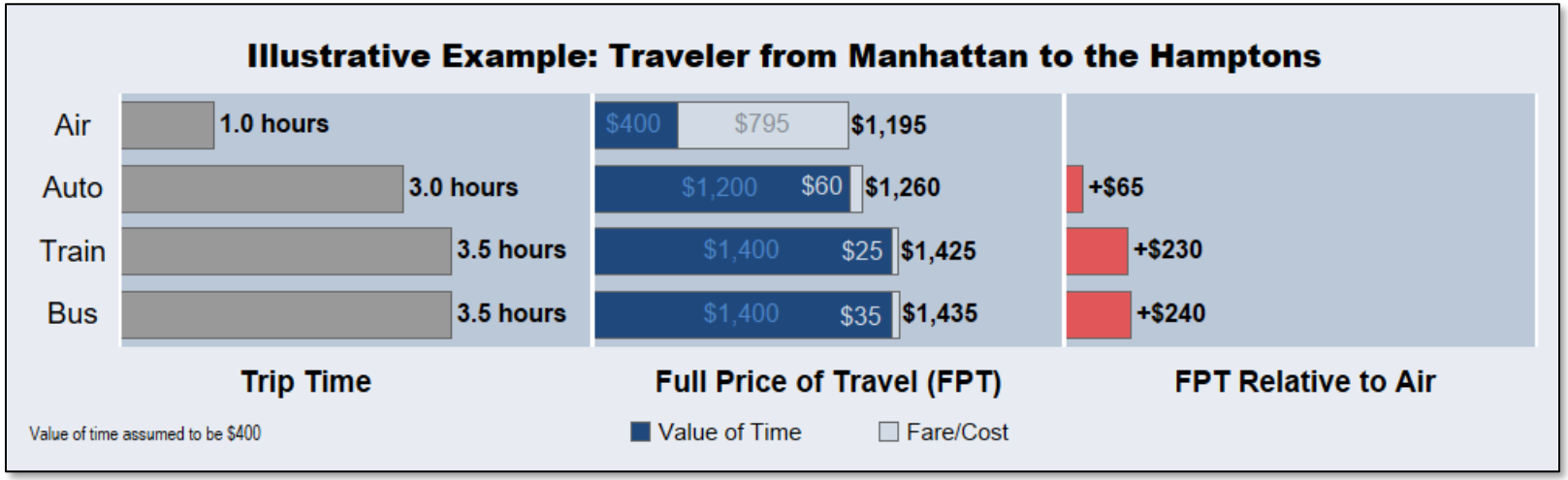
HTO users are typically individuals who **value time highly**

When deciding on transportation, they consider **out-of-pocket transportation costs PLUS the value of the time** they must devote to each mode

Importantly, total trip time includes any **ground travel time** needed on either end

An HTO user flying from Manhattan would have to value his/her time at about $400 per hour or more to select air vs. other modes

An illustrative example shows how a current traveler going from Manhattan to the Hamptons and valuing time at $400/hr. might assess the relative merits of air, auto, train, or bus service.



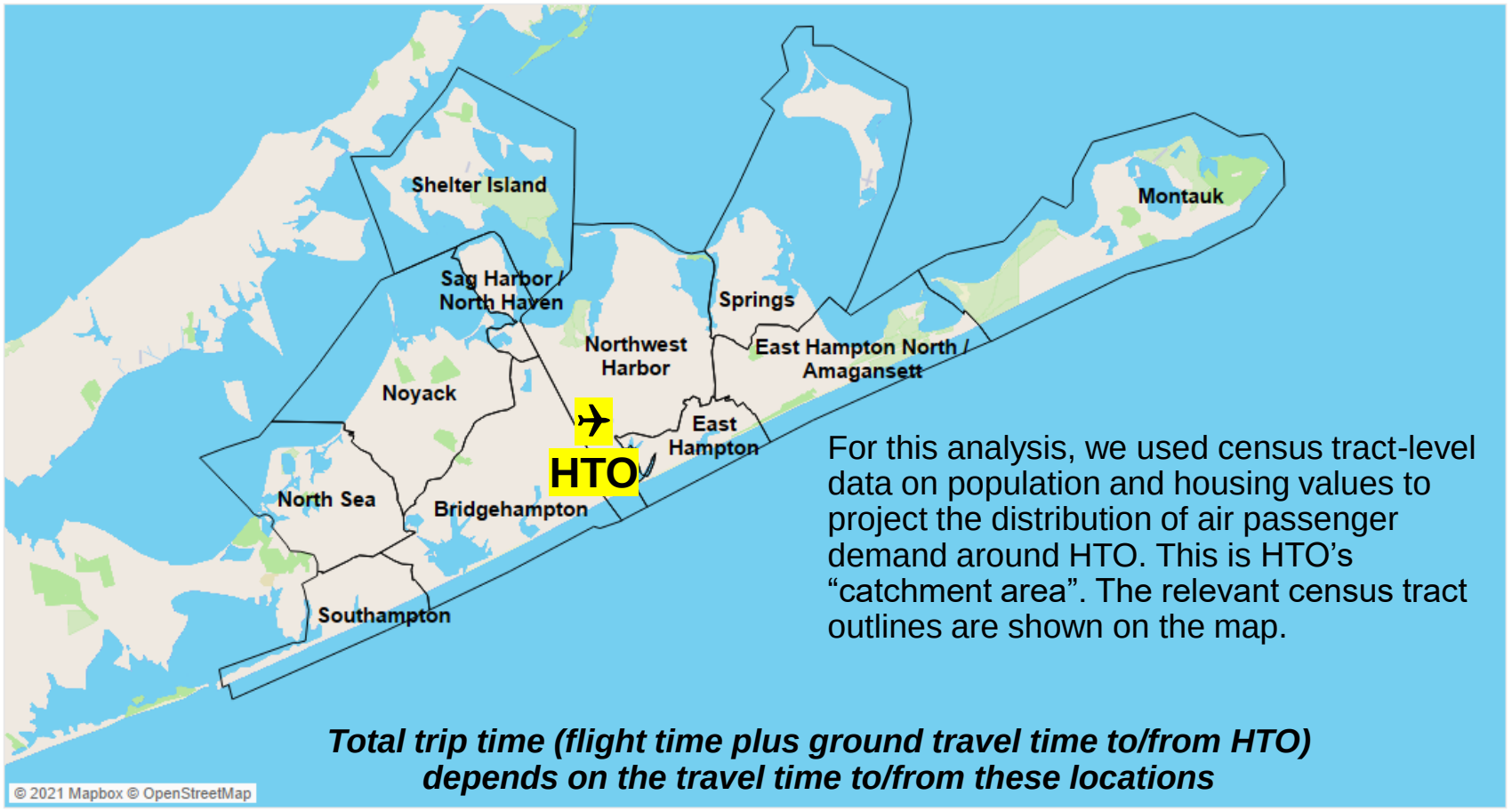
Because of the high value of time, air travel is seen as the least expensive option; if their perceived value of time were significantly less than $400, then they may have selected a different travel mode. There is evidence that **HTO users value their time at levels greater than $400/hour**.* Our analysis uses a value of time of $500/hour for current HTO users.

Given the high value of time, if HTO were to close, current users would likely seek out the next best air alternative (i.e., they would travel to a nearby airport that can handle their flight) or choose not to fly.

** The Economist (*Oct 11, 2012)

The full price of travel for passengers using HTO also includes ground travel time to/from HTO

Many HTO travelers' ultimate destinations or origins will be distributed among the villages of East Hampton Town and Southampton Town

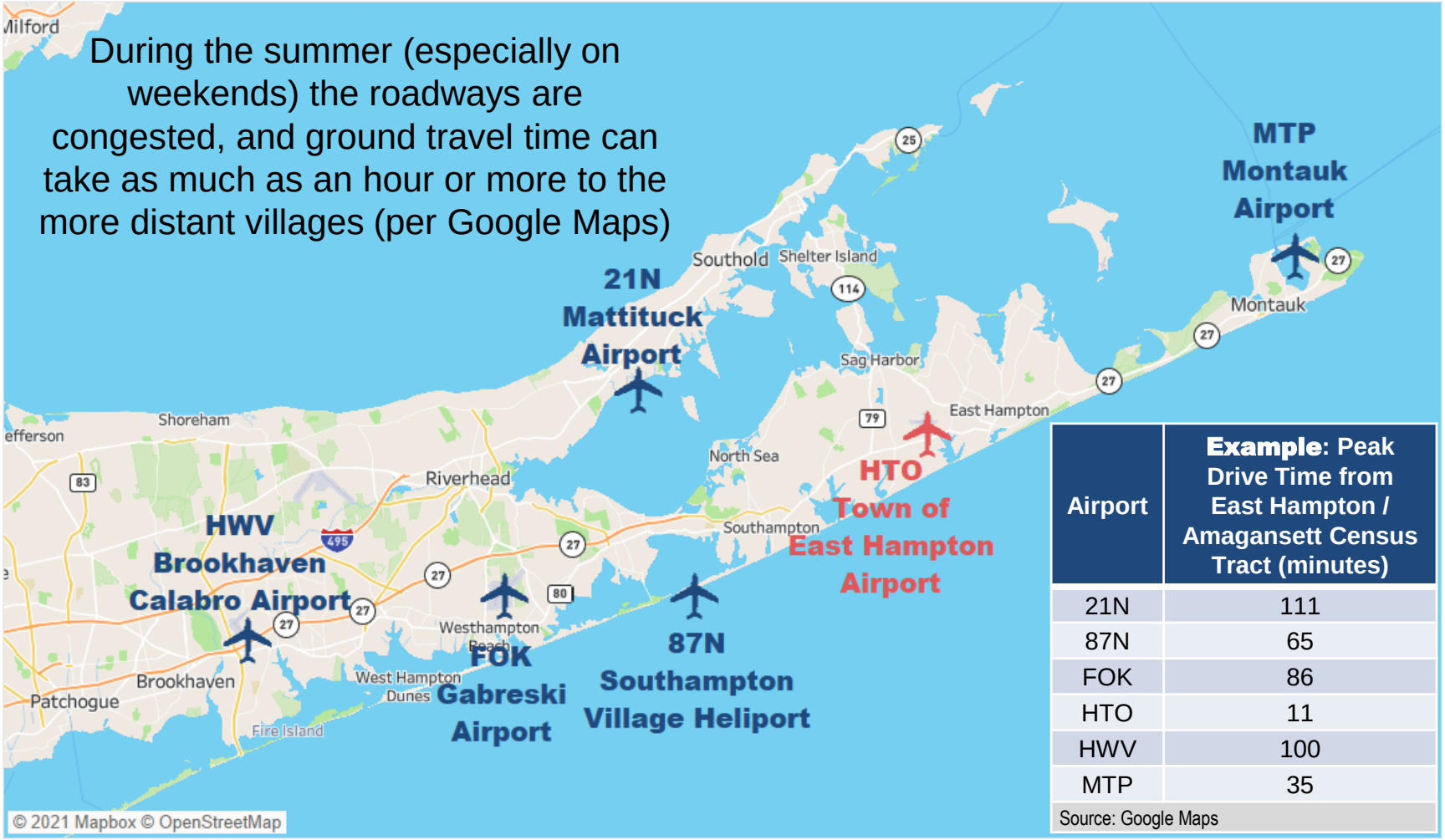


For this analysis, we used census tract-level data on population and housing values to project the distribution of air passenger demand around HTO. This is HTO's "catchment area". The relevant census tract outlines are shown on the map.

Total trip time (flight time plus ground travel time to/from HTO) depends on the travel time to/from these locations

Drive times will significantly increase for many HTO users if HTO is closed

During the summer (especially on weekends) the roadways are congested, and ground travel time can take as much as an hour or more to the more distant villages (per Google Maps)



Airport	**Example**: Peak Drive Time from East Hampton / Amagansett Census Tract (minutes)
21N	111
87N	65
FOK	86
HTO	11
HWV	100
MTP	35

Source: Google Maps

Aircraft diversions are estimated by accounting for the geographic dispersion of current HTO users

If HTO were to close

Air travelers would look at alternative ways to travel to/from the Hamptons

Some travelers might choose not to travel to the Hamptons at all or might travel less frequently

Air travelers will seek the next-closest airport

Air services will follow demand

- e.g., a commercial aircraft operator currently serving HTO would seek to move their services to an alternative airport that could serve affected HTO passengers

Passengers and operators will try to identify the best alternative

- Service will follow demand so long as there are no constraints at the alternative airport(s)

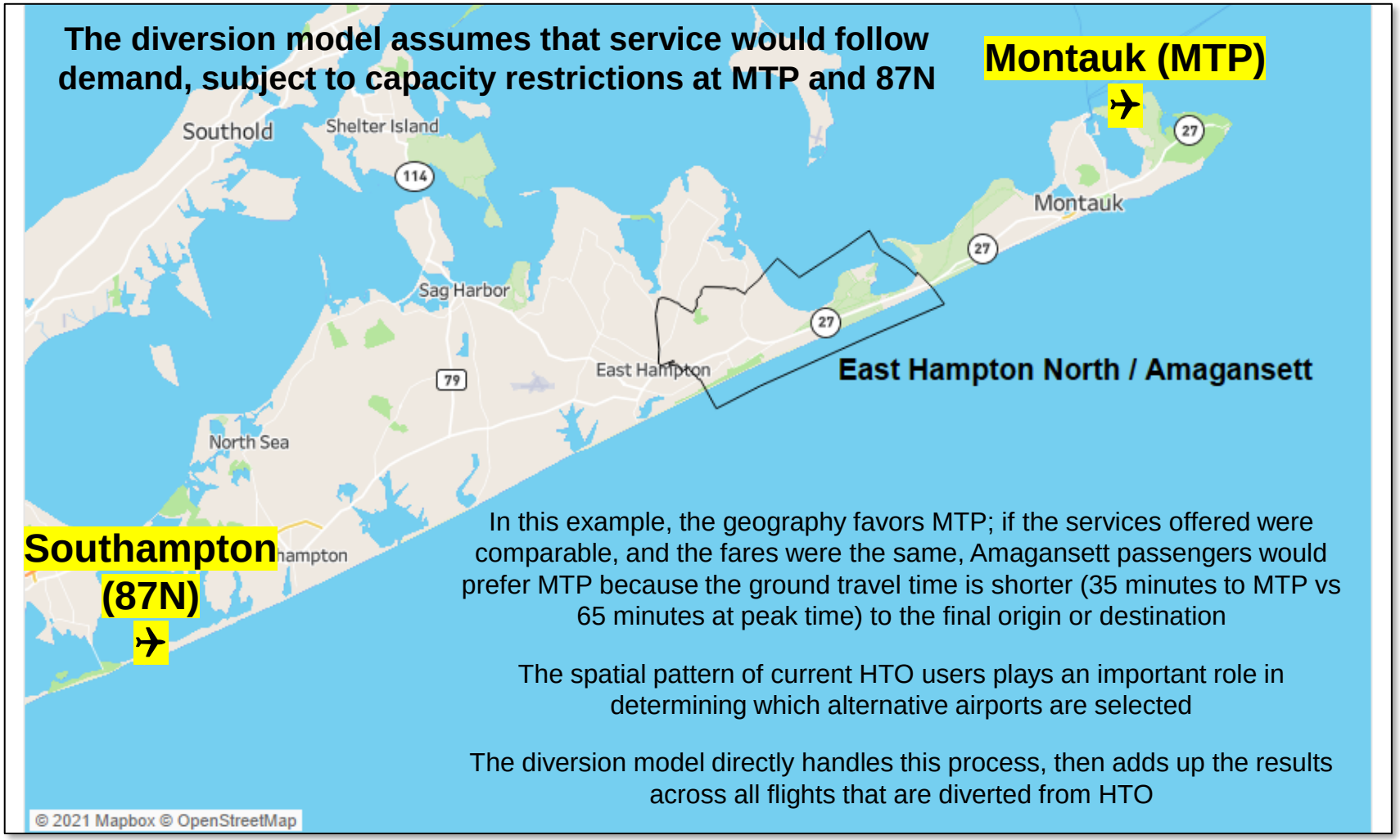
Geographic distribution is key

The diversion model explicitly takes account of where HTO users come from / go to in the Hamptons

The geographic distribution of current HTO users is key to assessing where flights and passengers will move if the airport were to close

Example: Travel to Amagansett with and without HTO helicopter service

If HTO were to close, and helicopter service was offered at MTP and 87N, which service would be more attractive for someone whose final destination is Amagansett?



Noise and emissions models were used to evaluate the impacts of aircraft operations changes

Once the movement of flights to alternative airports was determined by the diversion model, **industry-standard aircraft noise and emissions models** were used to evaluate the change in the noise-sensitive land area and the amount of CO2e* between the base case and the scenario for HTO and each alternative airport

Each model uses base case and scenario **aircraft-type specific aircraft operations as inputs**; the emissions model also accounts for changes in ground vehicle-miles traveled by passengers driving to/from an airport

The **FAA Area Equivalent Method (AEM)** is used as a screening procedure to determine whether there is a significant environment noise impact at alternative airports

- AEM results indicated a potential significant noise impact at MTP and 87N

Airports Council International's Airport Carbon and Emissions Reporting Tool (ACERT) was used to estimate CO2 emissions

- ACERT results indicate a net increase in emissions due to increased vehicle-miles required to access alternative airports

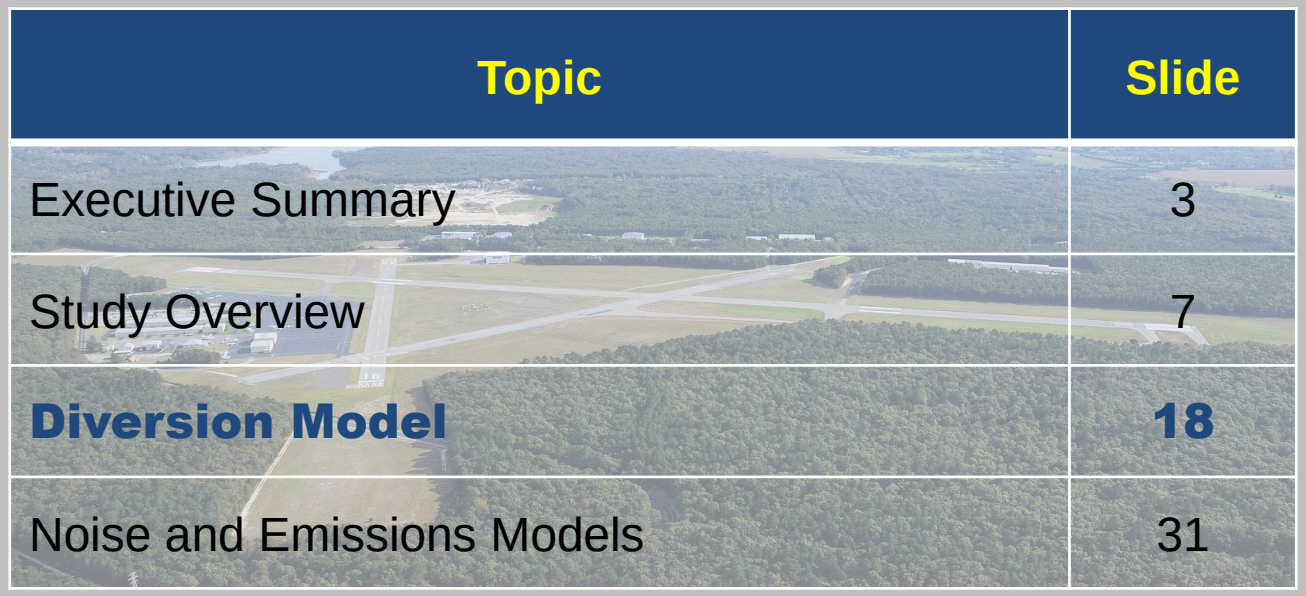
*CO2e is the carbon dioxide equivalent (CO2) emissions resulting from CO2, methane (CH4), and nitrous oxide (N2O) emissions

** Base/scenario aircraft operations by aircraft type converted to aircraft types in each model as appropriate

The modeling approach was conservative because it only considers initial diversions & resulting environmental impacts

For example, the **potential aircraft noise and emissions impacts of HTO closure may differ from what is** shown in this analysis due to follow-on behavior:

- Some jet and turboprop trips modeled as not occurring or diverting to FOK may convert to helicopter trips to/from 87N and MTP
- Airspace reallocation to other users and low level overflight to/from diversion airports may further increase noise & emissions exposure
- New noise-abatement flight procedures may be desirable at some diversion airports; compliance is unknown
- MTP and 87N have limited aircraft parking facilities; so some users may drop off passengers, depart, then return later for pick-up, thus further increasing operations, noise and emissions
- Some alternative airports may be unable or unwilling to accommodate all diverted passengers and operations



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The diversion model redistributes aircraft operations and calculates changes in ground travel

Diversion Model

Input

HTO 2019 operations (peak and off-peak) by user type

Census tract population and housing value

Drive times between census tracts and airports

Alternative airport characteristics

Modeling Process

Baseline: distribution of HTO passengers and flights to census tracts

Scenario: HTO passengers and flights redistributed to alternative airports using full price of travel and alternative airport characteristics

Results

Increased aircraft operations for each alternative airport

Increase in ground travel (vehicle-miles and vehicle-hours)

Diversion model: Peak and off-peak operations baselined to match existing estimates

Diversion model was baselined to match as closely as possible the 2019 data described in the document “Review of Operations and Complaints” prepared by HMMH*

Current study uses the same overall count of flight operations by each of five identified user types – Jet, Turboprop, Piston, Helicopter and Seaplane – in both the Peak “implementation period” (June 27 through September 30, 2019) and the Off-Peak period (the remainder of CY2019). Counts include local/training flights as well as itinerant flights.

Dataset incorporates the same “top 20” equipment types and the same time-of-day pattern described for the peak period in the HMMH document.

User Type	Peak	Off-Peak
Jet (Long-Range)	761	372
Jet (Short-Range)	2,373	885
Turboprop	5,416	5,110
Piston	6,106	2,950
Rotor	2,628	535
Seaplane	1,924	829
TOTAL	**19,208**	**10,681**

* HMMH produced a review of operations and complaints from June 27 – September 30, 2019 at HTO; the study was published in July 2020.

Diversion model: Catchment area for HTO determined based on drive times to/from relevant census tracts

Diversion model explicitly takes account of trip origins and destinations in the Hamptons by current HTO users.

It does this by estimating the initial "catchment area" for HTO that describes the geographic area surrounding the airport from which it attracts users; this is determined based on the drive times required to access HTO relative to other airports on a census tract-specific basis (see Slide 12 for census tracts).

Drive times between each census tract to and from each relevant airport alternative were obtained from Google Maps:

- Peak period used "pessimistic" drive times from July 8, 2021 at 4pm
- Off-peak period used "best guess" drive times from Oct 14, 2021 at 4pm

Census Tract	Area	Average Peak Period Drive Times (minutes) from Census Tract to Airport (reverse times may vary)							
		East Hampton HTO	Montauk MTP	Gabreski FOK	Mattituck 21N	Southampton Heliport 87N	Brookhaven HWV	Sag Harbor (seaplanes) SAG	Shinnecock Bay (seaplanes) SHC
36103201004	Montauk	43.8	10.0	119.8	160.9	114.2	149.4	74.1	130.3
36103201003	East Hampton North/Amagansett	19.2	29.5	93.2	118.3	72.0	106.6	47.8	103.7
36103201001	Springs	25.7	34.2	97.8	122.9	76.0	111.2	52.1	108.3
36103200901	East Hampton Beach	11.1	35.3	86.1	111.1	64.8	99.7	41.8	96.5
36103200902	Northwest Harbor	8.8	40.0	83.0	108.3	62.0	96.7	38.9	96.2
36103190708	Sag Harbor/North Haven	14.0	51.5	70.3	96.1	50.9	83.7	23.2	80.9
36103180300	Shelter Island	48.5	87.2	97.5	61.3	85.5	110.9	58.1	108.1
36103190704	Bridgehampton	12.0	53.5	64.4	104.1	56.2	92.3	32.3	74.6
36103190707	Noyack	20.7	62.2	50.8	76.3	37.8	64.0	32.3	61.0
36103190800	Southampton	35.6	76.4	35.7	60.1	13.9	47.3	48.9	35.3
36103190706	North Sea	33.6	74.6	33.7	58.2	21.2	45.6	42.7	42.6

Diversion model: Airport characteristics assigned based on current capabilities

HTO catchment area varies by **user group**

- Jet, turboprop, piston, helicopter, seaplane

Model accounts for **individual airport characteristics**

- Operating capabilities (e.g. runway length)
- Restrictions (e.g. operating hours)

Examples

Jet users near Montauk would be in the HTO catchment area because HTO is the closest airport that can handle jet traffic

- Montauk Airport's runway is too short for most jet aircraft

Piston users near Montauk would not be in the HTO catchment area because they are able to use Montauk Airport

Airport	User Groups	Restrictions / Notes
East Hampton	Jet/Turboprop/Piston/Helicopter/Seaplane	
Montauk	Turboprop/Piston/Helicopter/Seaplane	
Gabreski	Jet/Turboprop/Piston/Helicopter/Seaplane	voluntary curfew 11pm-7am
Southampton	Helicopter	curfew 7pm-8am*
Mattituck	Piston/Helicopter	curfew 8pm-6am (no night flying)*
Brookhaven	Jet/Turboprop/Piston/Helicopter/Seaplane	used only when Gabreski is under curfew
Sag Harbor	Seaplane	alternate for seaplane traffic if HTO closes
Shinnecock Bay	Seaplane	alternate for seaplane traffic if HTO closes

*Actual curfew times vary by season. Southampton's curfew rules could be challenged in the future, effectively opening the facility to additional operations.

Diversion model: Initial geographic distribution of HTO passengers based on population and house values

Model **determines initial distribution** of HTO passengers (and flights) to the catchment area census tracts

Distribution is assumed to be **in proportion to current population weighted by the average house value** in each tract

- Given the high incomes of HTO users, this is likely to be a reasonable proxy for the geographic demand for private and commercial air travel into and out of HTO

Diversion model: Some census tracts split their initial demand between HTO and another facility

Another important consideration: For a given census tract, drive times to and from different airports may be very similar (or may be shorter in one direction to one airport, but shorter in the return direction to a different airport), so one could reasonably select either one as “closest”.

In these cases where a census tract could utilize HTO or an alternative airport equally well, the model essentially attributes only half the HTO flights and passengers that it would normally assign to that tract.

For the peak period Base Case analysis where HTO is still open:

- Southampton and North Sea census tracts are split between East Hampton and Gabreski catchment areas for jets, turboprops, pistons and seaplanes; for helicopters, Southampton and North Sea are in the Southampton Heliport catchment area
- Montauk census tract is in the Montauk Airport catchment area for all user types except jets
- All other census tracts are in the East Hampton catchment area

Diversion model: HTO users redistribute to alternate airports largely as a function of census tract, aircraft type, and airport capabilities

Model estimates each user's full price of travel, which includes the value of time spent flying and ground travel time. If HTO were to close, model then finds the alternate facility that would minimize the increase in their full price of travel; this will be the next closest facility to their census tract (based on ground travel time) that can handle their type of flight.

Model essentially redistributes HTO's catchment area to alternative locations. Because it explicitly considers full price of travel, model also estimates portion of users who would choose to no longer fly.

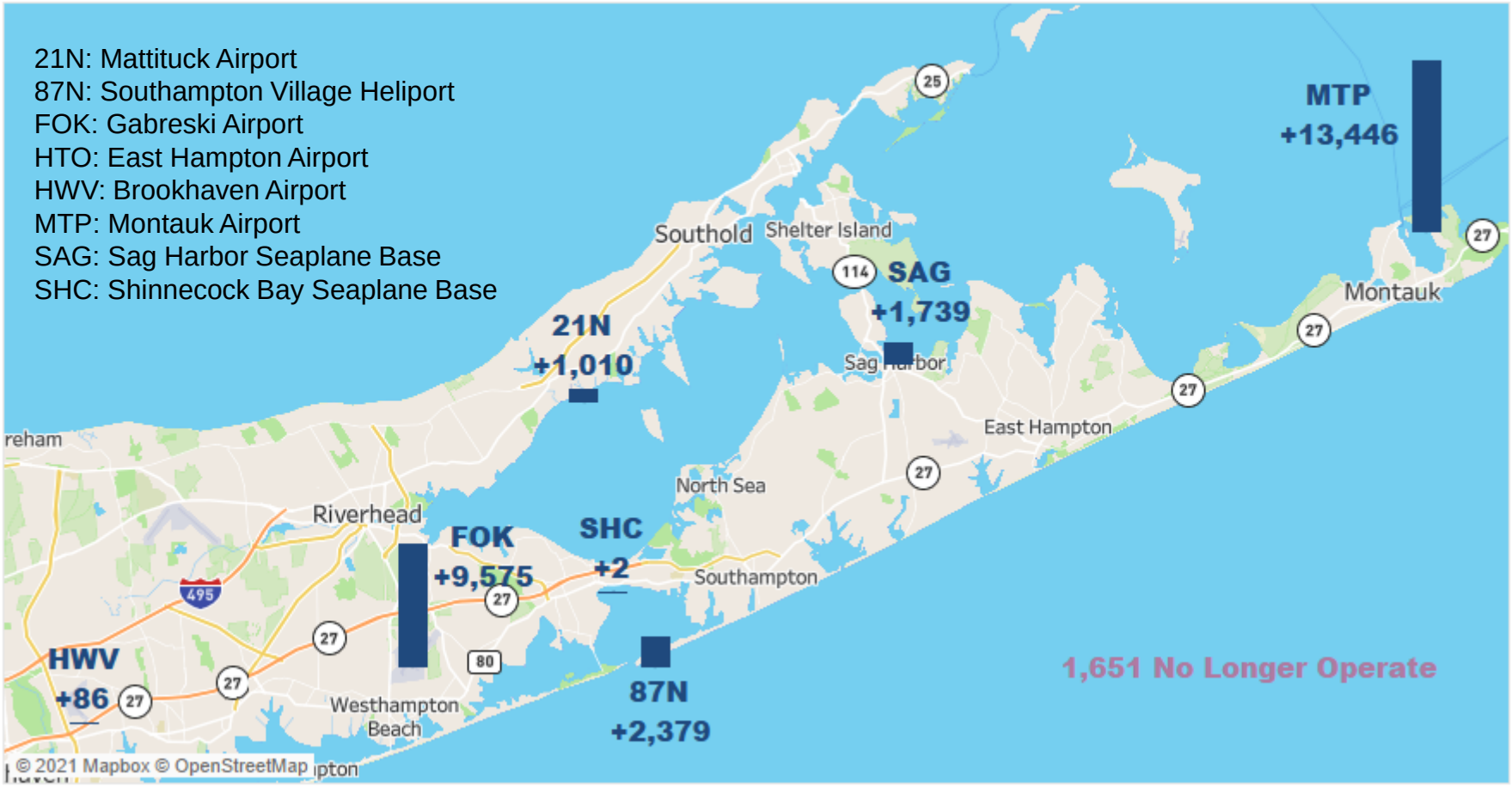
Redistribution of HTO Traffic by Census Tract (Peak Period)

Census Tract	Jet	Turboprop	Piston	Helicopter	Seaplane
Montauk	Gabreski	*	*	*	*
East Hampton North/Amagansett	Gabreski	Montauk	Montauk	Montauk	Montauk
Springs	Gabreski	Montauk	Montauk	Montauk	Montauk
East Hampton	Gabreski	Montauk	Montauk	Montauk	Sag Harbor/Montauk
Northwest Harbor	Gabreski	Montauk	Montauk	Montauk	Sag Harbor
Sag Harbor/North Haven	Gabreski	Gabreski/Montauk	Gabreski/Montauk	Southampton Heliport	Sag Harbor
Shelter Island	Gabreski	Gabreski/Montauk	Mattituck	Mattituck	Sag Harbor
Bridgehampton	Gabreski	Gabreski/Montauk	Gabreski/Montauk	Southampton/Montauk	Sag Harbor
Noyack	Gabreski	Gabreski	Gabreski	Southampton Heliport	Sag Harbor
Southampton	Gabreski	Gabreski	Gabreski	*	Gabreski
North Sea	Gabreski	Gabreski	Gabreski	*	Gabreski

*Predominantly not in HTO catchment area

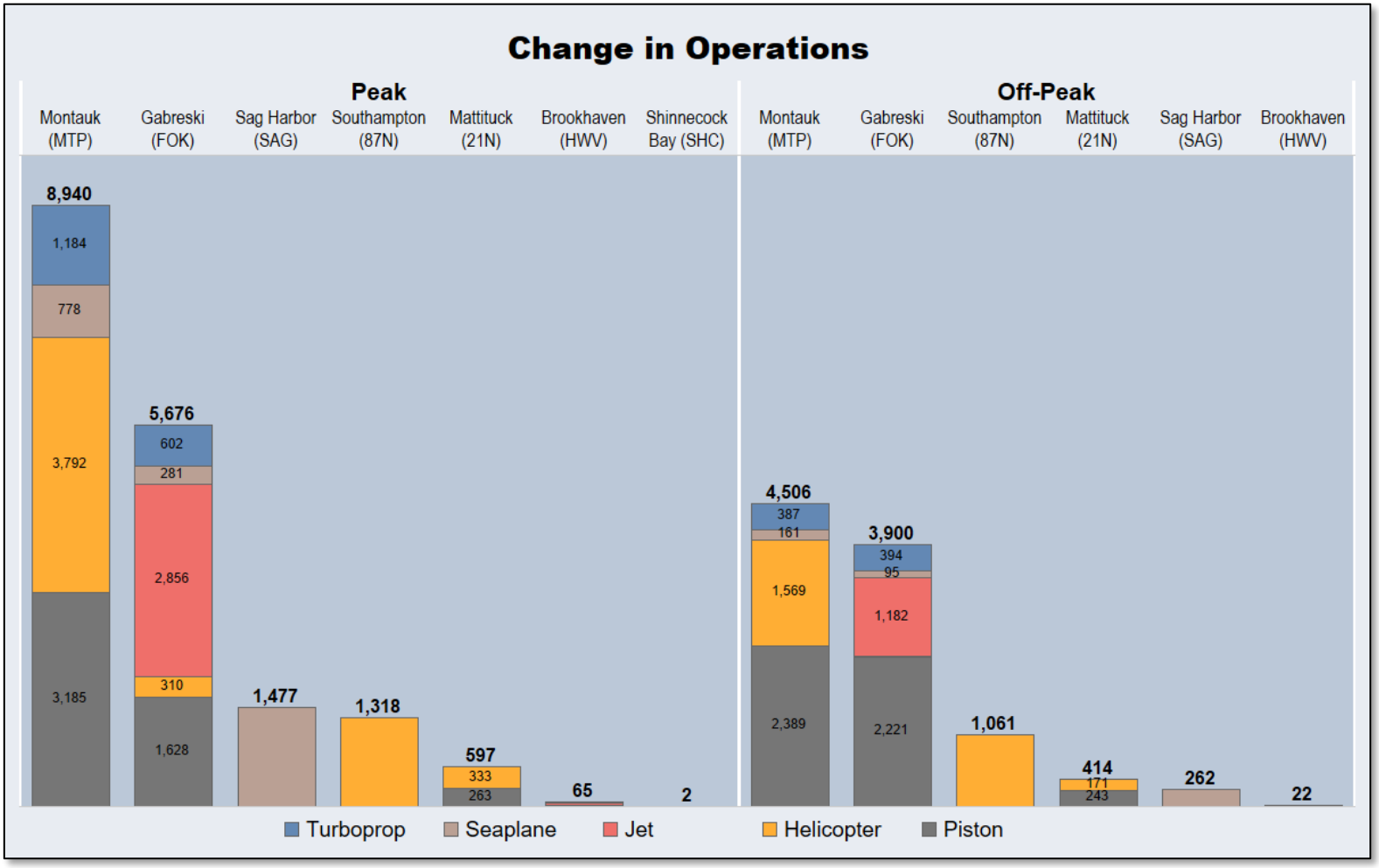
If HTO closes, 94% of HTO operations relocate; 6% no longer operate

Change in Annual Operations

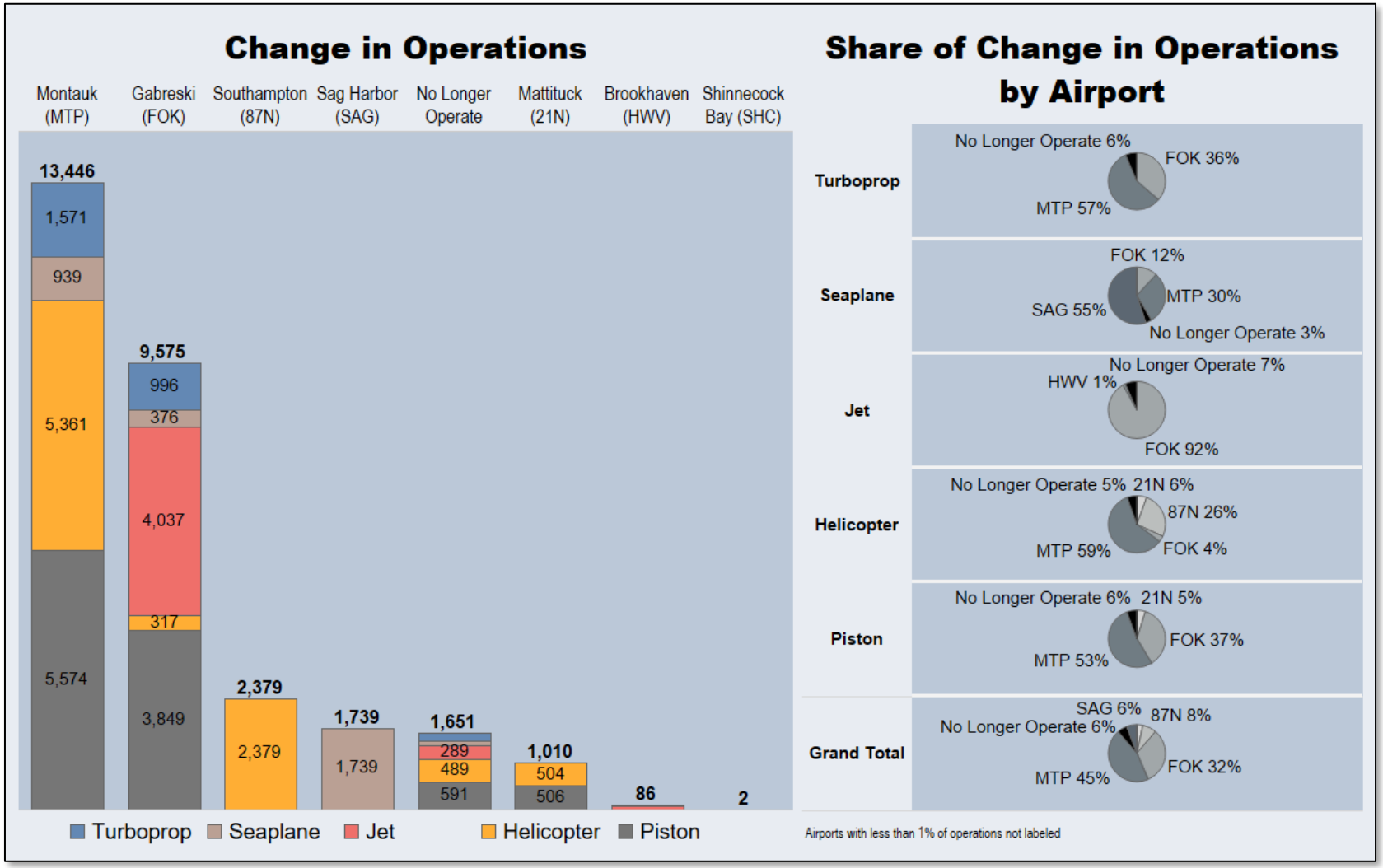


Source: GRA analysis

Model results by season and facility:
Peak – 46.5% moves to Montauk; 29.5% to Gabreski; 18% elsewhere
Off-Peak – 42% moves to Montauk, 36.5% to Gabreski; 16.5% elsewhere

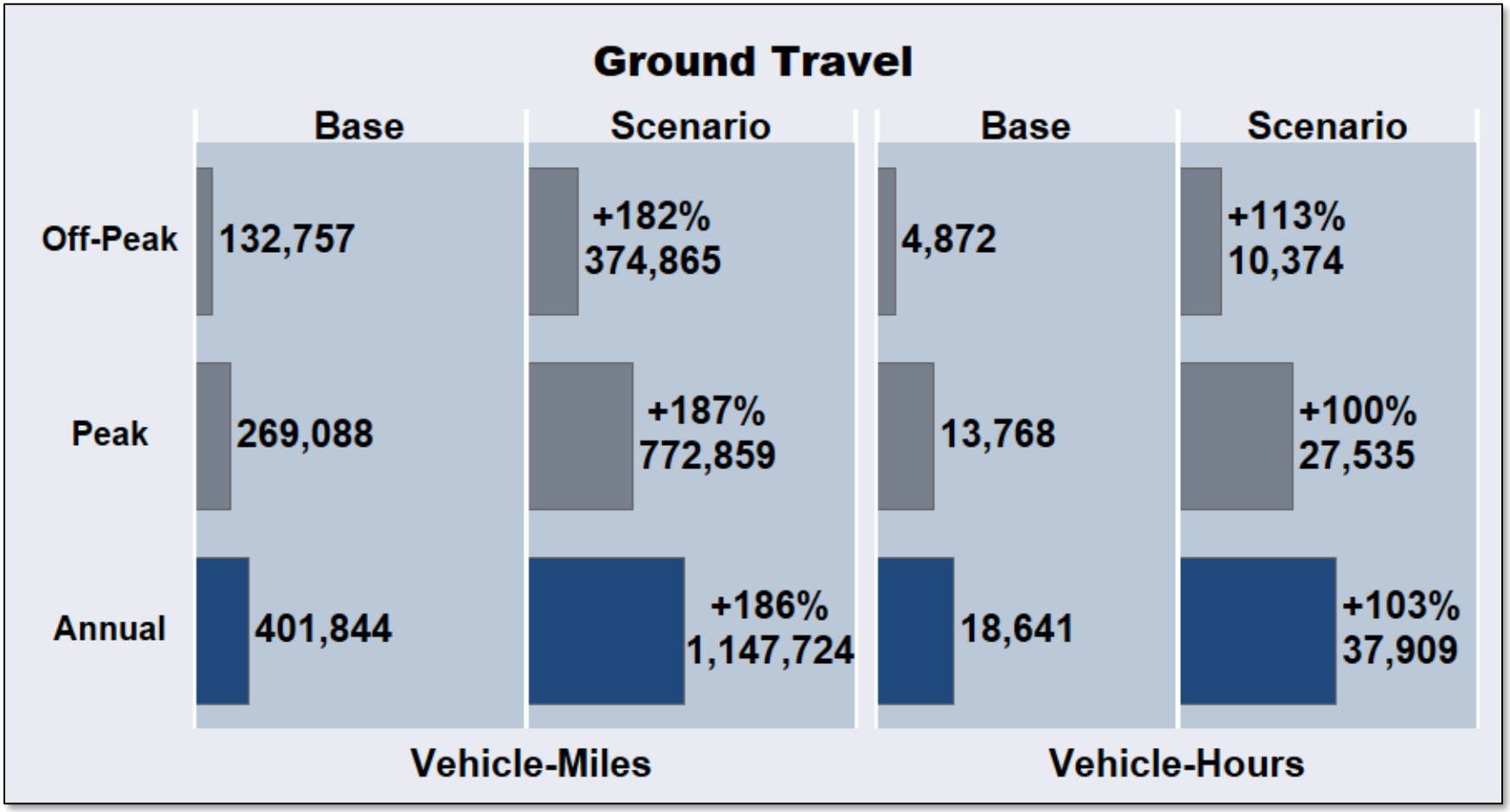


Overall distribution of model results for 2019:
Montauk and Gabreski handle majority of diverted traffic
45% moves to Montauk, 32% to Gabreski



Numbers do not sum to total due to rounding

Ground vehicle-miles and vehicle-hours more than double if HTO is closed*

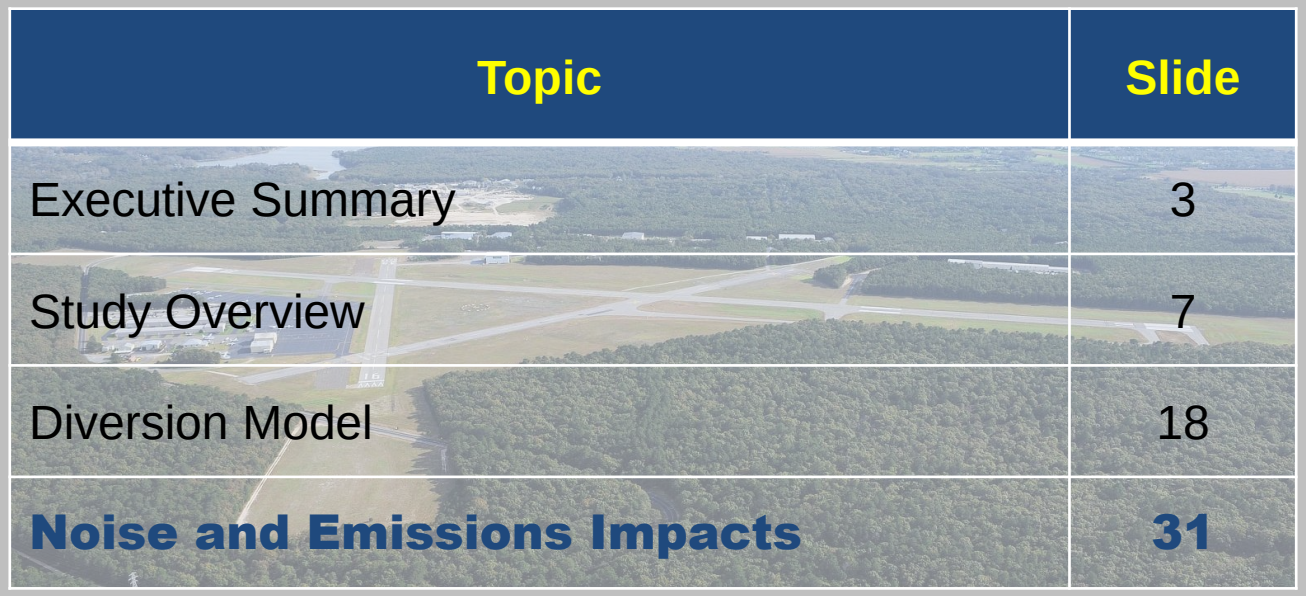


* Projected increases were computed assuming no further increase in drive times described on Slide 21.

HTO users' average full price of travel rises by 13% in the peak period*

User Type	Peak Period			Off-Peak Period		
	Base Case (HTO open)	Scenario (HTO closed)	Pct Chg	Base Case (HTO open)	Scenario (HTO closed)	Pct Chg
Helicopter	$1,535	$1,726	12.5%	$1,503	$1,657	10.3%
Jet	$2,493	$2,903	16.4%	$2,642	$2,883	9.1%
Turboprop	$1,310	$1,504	14.8%	$1,253	$1,402	11.9%
Seaplane	$1,719	$1,839	7.0%	$1,677	$1,796	7.1%
Piston	$1,361	$1,545	13.5%	$1,320	$1,463	10.9%
All	$1,707	$1,932	13.1%	$1,622	$1,785	10.0%

* Projected price increase is 10% in off-peak period. Increases were computed using average passenger value of time at $500/hour.



FAA's AEM noise model is a screening tool to assess noise impacts

Description

The AEM is an FAA screening procedure used to simplify the assessment step in determining the need for further analysis of noise impacts. The noise contour metric is the Day-Night Average Sound Level (DNL) which provides a single quantitative rating of a noise level over a 24-hour period. This rating involves a 10-dBA penalty to aircraft operations during the nighttime (between 10 PM and 7 AM) to account for the increased annoyance in the community.

Input

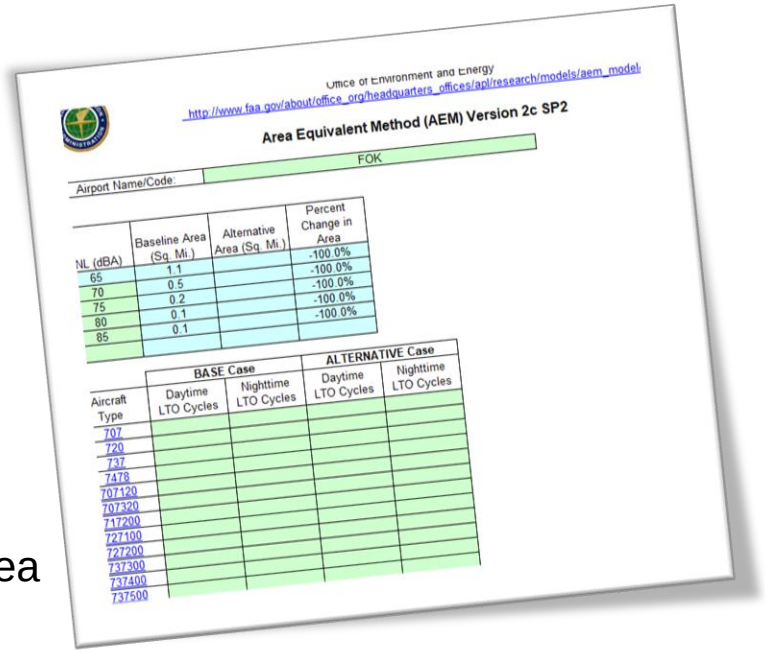
Average daily aircraft operations by aircraft type* for which a noise profile exists

Output

Square miles within the DNL 65 dBA contour area

Interpretation of Results

If there is a 17% increase in DNL 65 dBA contour area then there is potential for significant environmental impact


Office of Environment and Energy
http://www.faa.gov/about/office_org/headquarters_offices/apl/research/models/aem_model/

Area Equivalent Method (AEM) Version 2c SP2

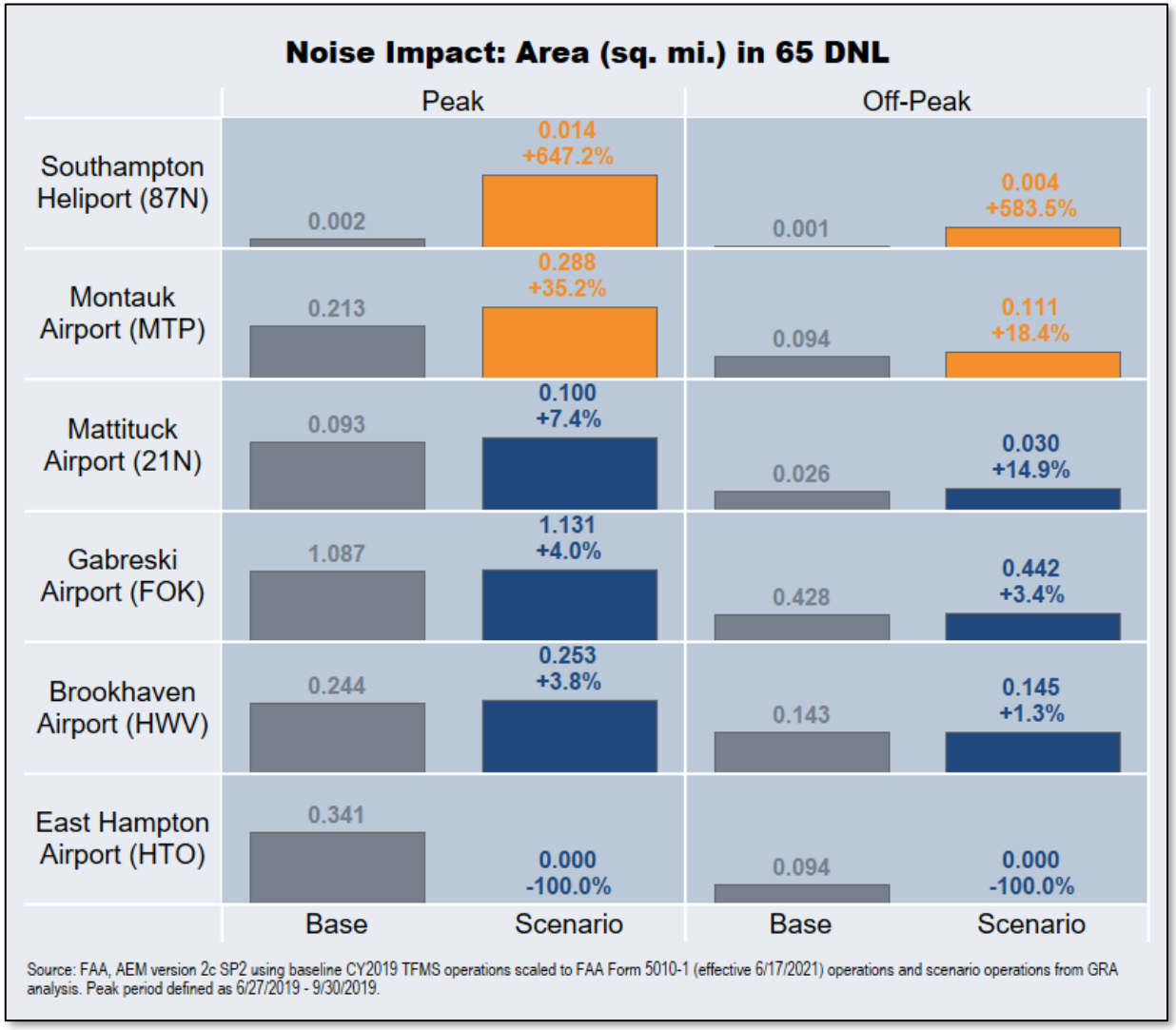
Airport Name/Code: FOK

NL (dBA)	Baseline Area (Sq. Mi.)	Alternative Area (Sq. Mi.)	Percent Change in Area
65	1.1		-100.0%
70	0.5		-100.0%
75	0.2		-100.0%
80	0.1		-100.0%
85	0.1		-100.0%

Aircraft Type	BASE Case		ALTERNATIVE Case	
	Daytime LTO Cycles	Nighttime LTO Cycles	Daytime LTO Cycles	Nighttime LTO Cycles
707				
720				
737				
7478				
707120				
707320				
717200				
727100				
727200				
737300				
737400				
737500				

* Base/scenario aircraft operations by aircraft type converted to equivalent aircraft types in AEM as appropriate

Redistribution of aircraft operations causes potentially significant noise impacts at 87N & MTP



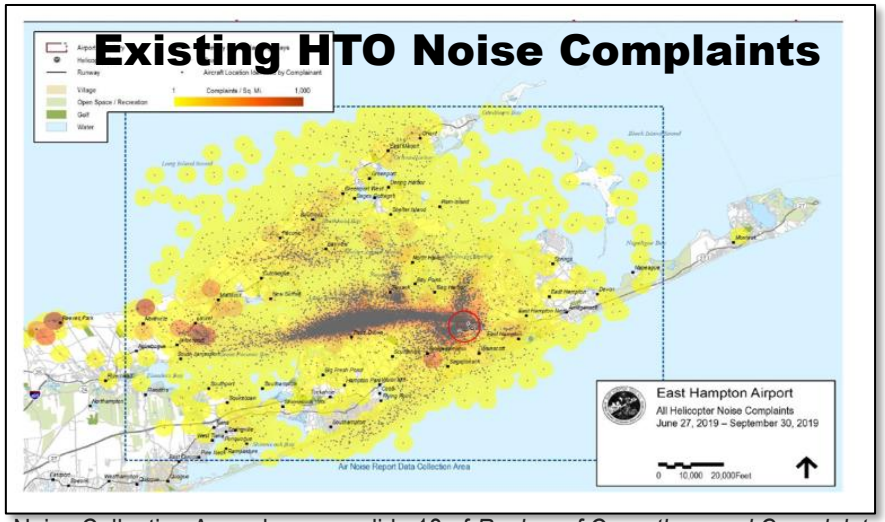
Source: FAA, AEM version 2c SP2 using baseline CY2019 TFMS operations scaled to FAA Form 5010-1 (effective 6/17/2021) operations and scenario operations from GRA analysis. Peak period defined as 6/27/2019 - 9/30/2019.

- Baseline
- Scenario results in less than 17% increase in area within DNL 65 dBA contour
  (no significant impacts on a noise sensitive area)
- Scenario results in 17% or more increase in area within DNL 65 dBA contour
  (potential significant impact that could result in a DNL 1.5 dBA or greater increase on a noise sensitive area; further analysis is required)

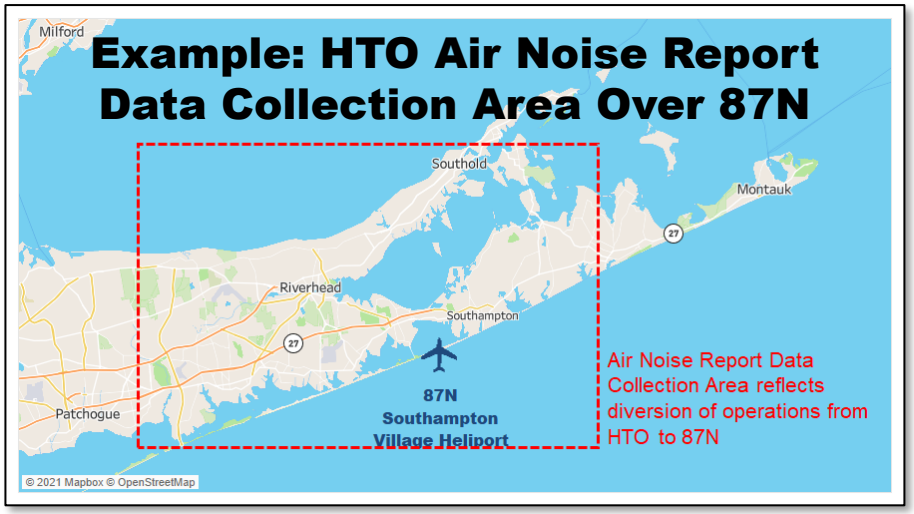
Complaints will increase at the alternative airports and along their flight paths

When operations move from HTO to alternative airports, complaints will increase at the alternative airports and along their flight paths.

While the exact pattern of complaints is uncertain, the size of the Noise Data Collection Area used at HTO is a good indicator of the geographic area potentially affected (shown at right), with shifting of the area to alternative airports



Noise Collection Area shown on slide 18 of *Review of Operations and Complaints, June 27 – September 30, 2019 at East Hampton Airport (HTO)*, HMMH, July 2020



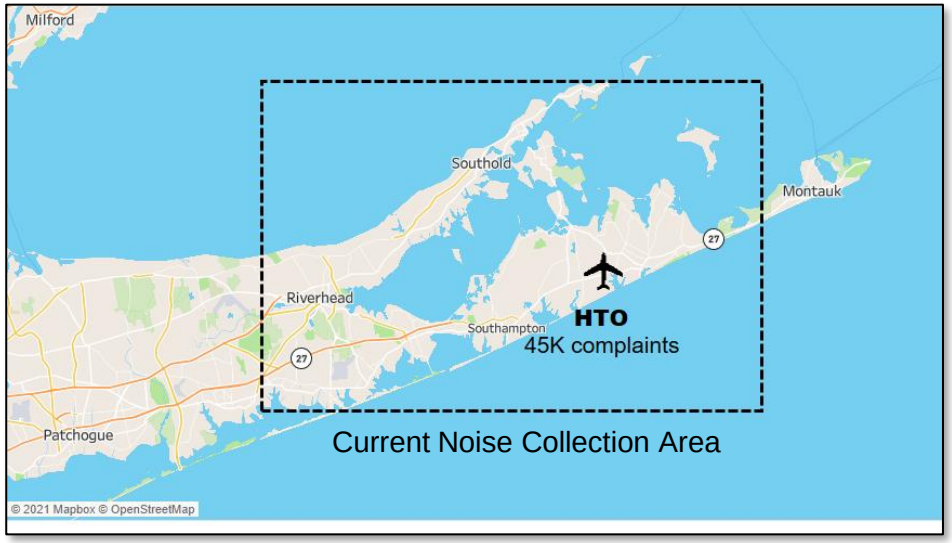
The example at left shows helicopter operations moving from HTO to 87N and the resulting size and location of Noise Collection Area

If HTO closes, noise impacts would be redistributed within the East Hampton environs rather than materially reduced

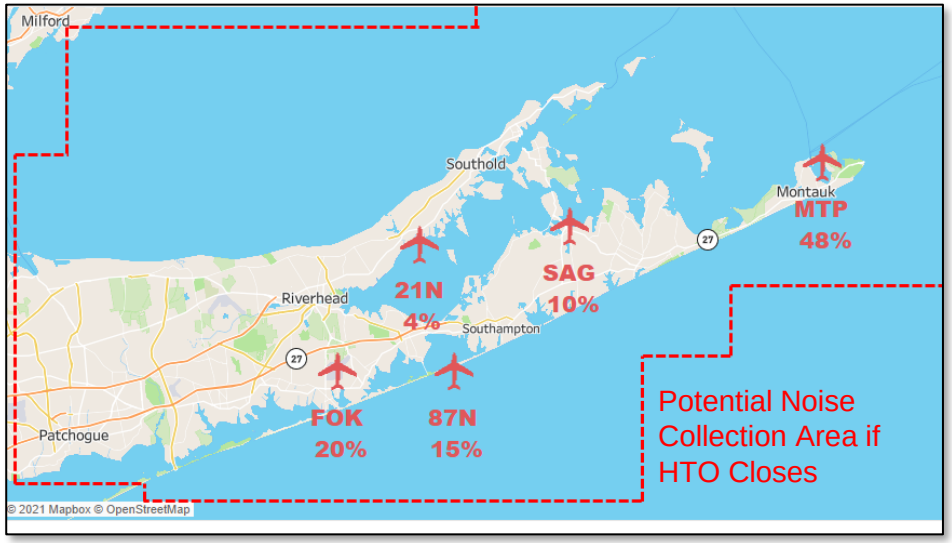
Noise Collection Areas & Estimated Redistribution of Aircraft Noise Complaints

Based on methodology & data described in slide 34

Base Case



Scenario



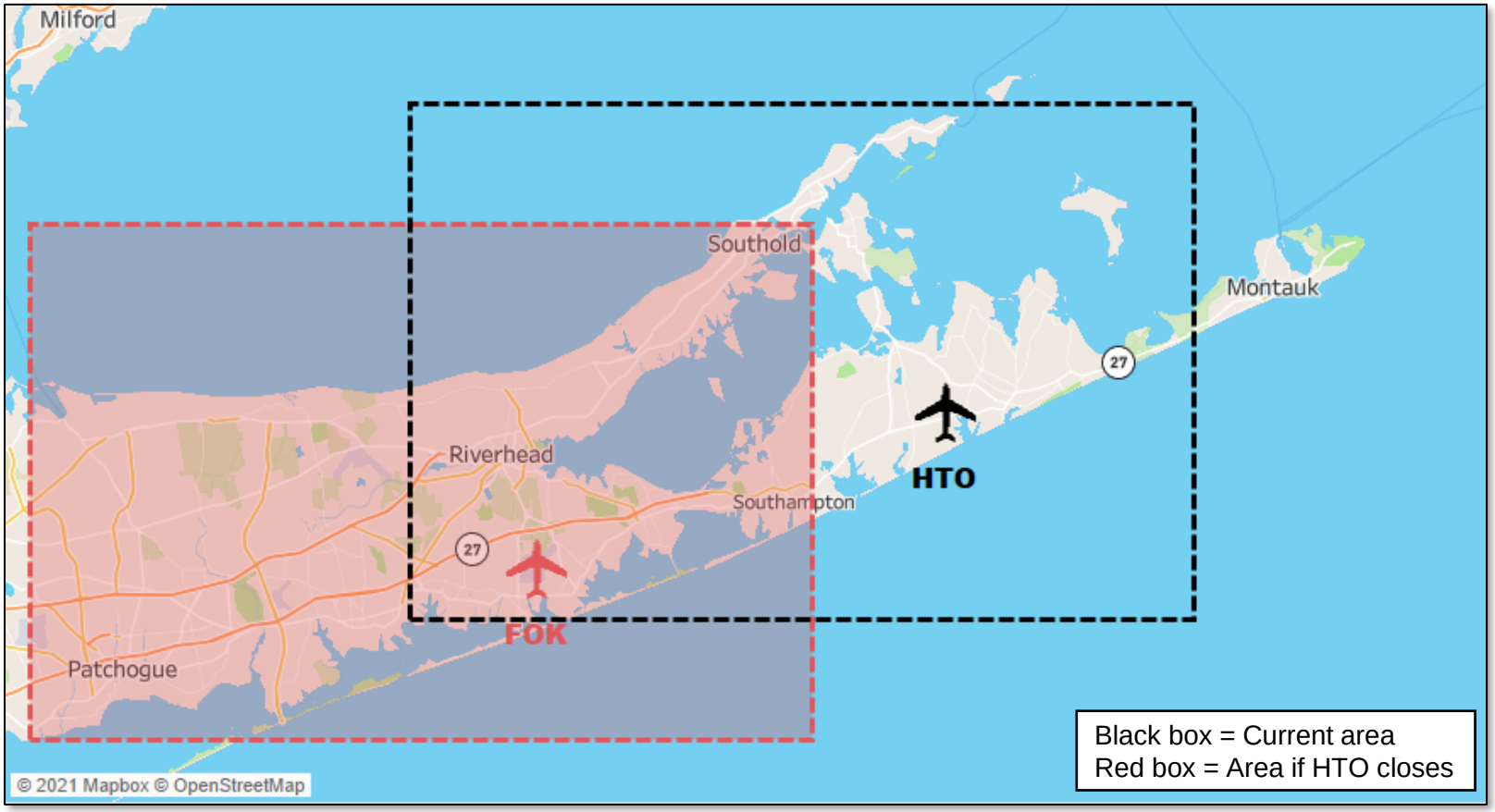
Complaints result from aircraft operations at airports or aircraft flying to/from airports, but the physical location of the person making the complaint can be anywhere within the noise collection area

Helicopters move primarily to MTP and 87N resulting in expanded complaint exposure in Montauk & areas west of Southampton

Noise Collection Area increases and covers a more populated area

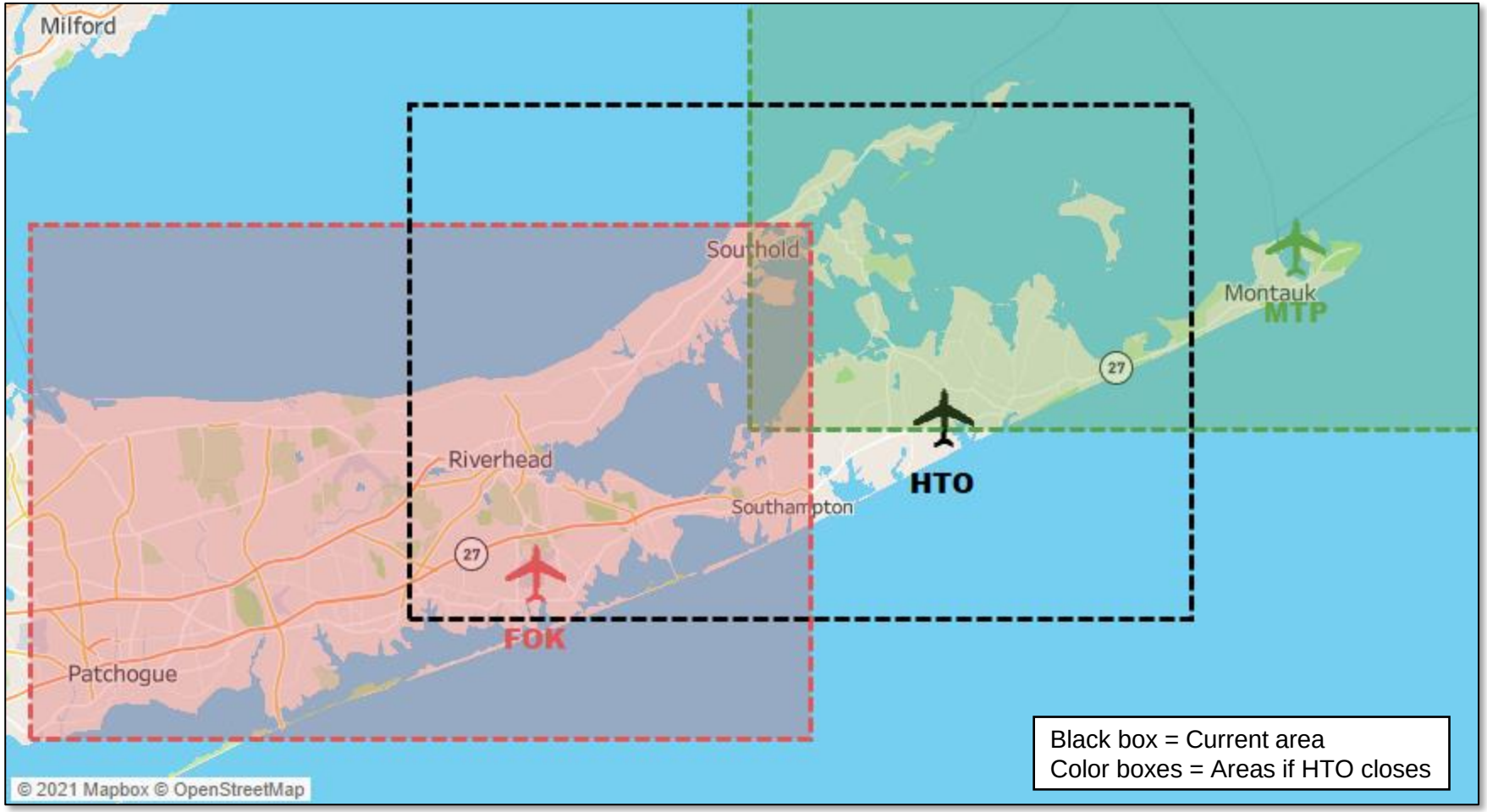
Jets move primarily to FOK resulting in expanded complaint exposure in areas west of Southampton & reduced complaint exposure east of Southampton

Noise Collection Area is similar in size and moves West for jet operations



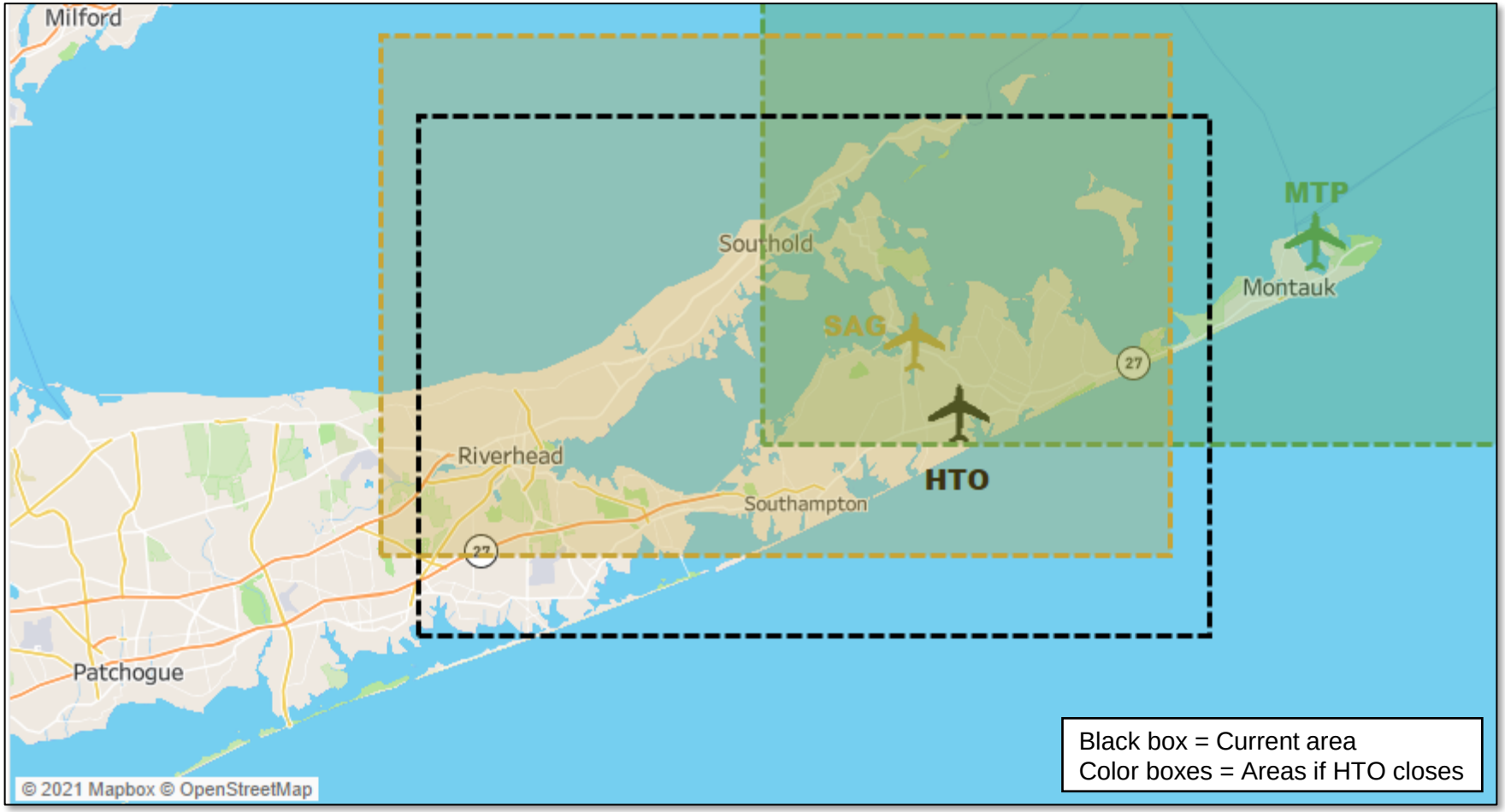
Turboprops & pistons move primarily to MTP and FOK resulting in expanded complaint exposure in Montauk & areas west of Southampton

Noise Collection Area increases and covers a more populated area



Seaplanes move primarily to MTP and SAG resulting in expanded complaint exposure in Montauk

Noise Collection Area is similar in size and moves slightly



Additional potential noise & environmental impacts

Overflights

Aircraft diverting from HTO to Montauk and Sag Harbor will overfly enroute locations at altitudes that will sometimes cause noise and emission effects that reach ground levels.

These may cause additional adverse impacts that exceed those formally modeled.

Training

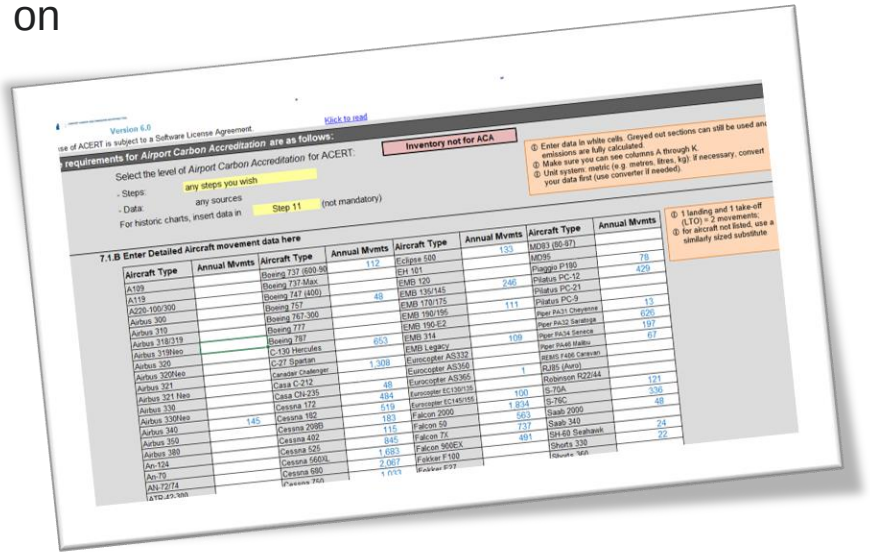
If HTO were to close, airspace surrounding other Long Island airports would become more congested. Conversely, airspace surrounding HTO would become uncontrolled with current operations diverting elsewhere.

The combined effect could potentially cause an increase in training and recreational flying near and surrounding HTO that could increase noise and emissions beyond what was formally modeled.

ACI's ACERT tool calculates greenhouse gases from airport operations

Description

The Airport Council International (ACI) ACERT tool calculates greenhouse gas (GHG) emissions from an airport infrastructure and operations. The methodology is based on the GHG Protocol and on ICAO Doc 9889 (Airport Air Quality manual).



Input for This Study*

Aircraft operations by aircraft type** and ground vehicle-miles traveled; peak and off-peak operations evaluated

Output

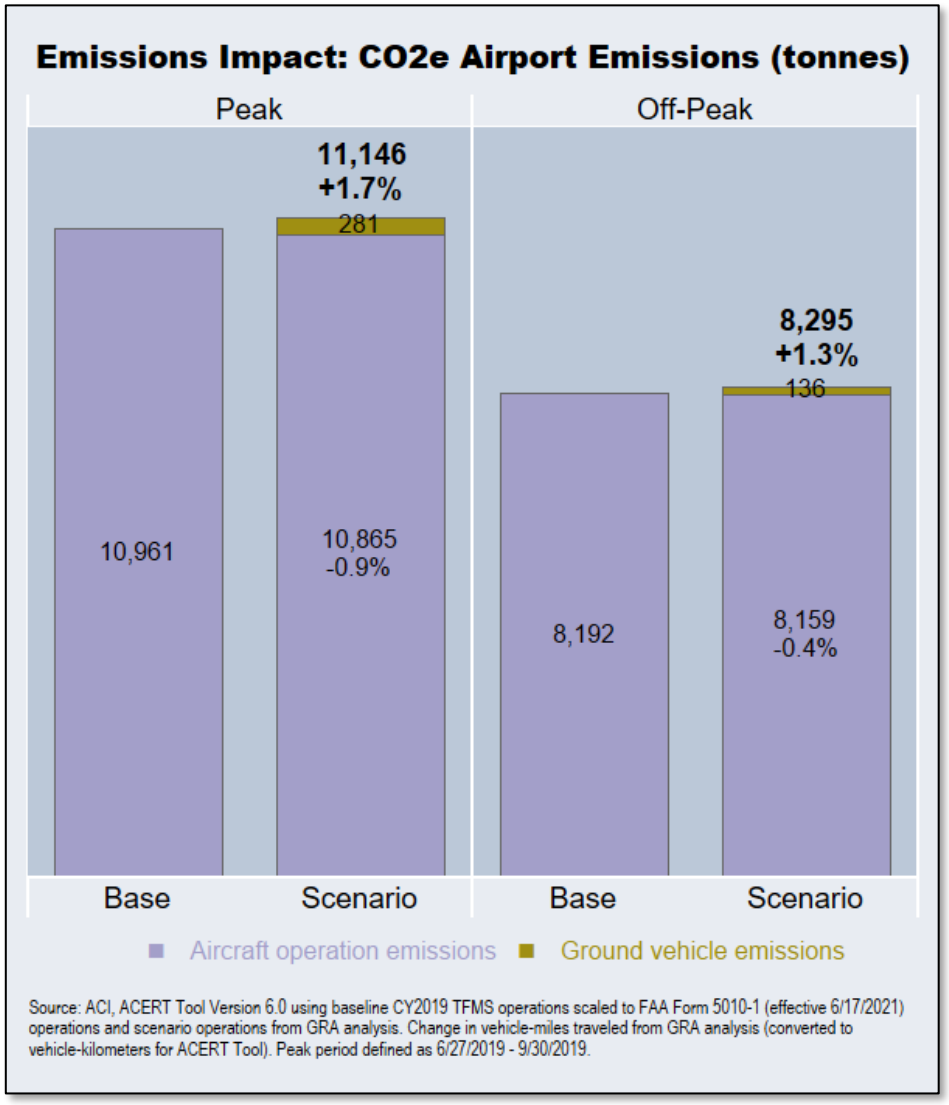
CO2e tonnes per year due to aircraft operations

Interpretation of Results

The change in CO2e emissions between the base and scenario can be compared

* The ACERT tool has the capability to evaluate different airport sources of emissions, but only aircraft operation and ground vehicle-miles were evaluated for this study
** Base/scenario aircraft operations by aircraft type converted to equivalent aircraft types in ACERT as appropriate

The closure of HTO would result in an increase in total greenhouse gas emissions



Even though emissions associated with aircraft operations decline slightly (because some previous air travelers no longer fly), **total emissions increase** by more than 1% in each season because of the increase in vehicle-miles traveled by passenger to/from alternative airports

Addendum: Consideration of other facilities

The analysis presented here explicitly considers only public-use facilities as alternatives to HTO. There are some private-use facilities (closed to the public) in the Hamptons; for example, Bistrians Heliport near HTO, Lufker Airport in East Moriches, and Westmoreland Airport and Klenawicus Air Field on Shelter Island. If any of these were to become available as an alternate, that likely would affect the results, but not the conclusions.

Example: Bistrians Heliport is a private-use facility located about 5 miles east of HTO. If this facility were to become generally available for helicopter service in the scenario where HTO is closed, nearly all the helicopter traffic that was projected to move to Montauk would likely move to Bistrians instead; some of the traffic projected to move to Southampton Heliport might also move to Bistrians. In this situation, the models would likely show the following:

- The noise collection area for helicopters would remain more centered near HTO than currently modeled
- The overall increase in ground vehicle-miles and vehicle-hours would be somewhat less than currently modeled
- The overall change in emissions would be somewhat less than currently modeled

Note: We have not re-run the models to include Bistrians or other facilities; the above examples are based on the logic used in each model, and actual results might vary.


EH
CA
EAST
HAMPTON
COMMUNITY
ALLIANCE