

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD  
Before Administrative Judges  
Louis J. Carter, Chair  
Frederick J. Shon  
Dr. Oscar H. Paris

-----x  
In the Matter of: : Docket Nos.  
CONSOLIDATED EDISON COMPANY OF NEW YORK : 50-247 SP  
Inc. (Indian Point, Unit No. 2), : 50-286 SP  
:   
POWER AUTHORITY OF THE STATE OF NEW YORK : July 23, 1982  
(Indian Point, Unit No. 3) :  
-----x

Testimony Submitted on Behalf of  
"New York City Council" Intervenors

By  
DAVID GURIN, DEPUTY COMMISSIONER  
JOEL FRIEDMAN, P.E.  
ROBERT MCCARTHY  
of the NEW YORK CITY DEPARTMENT OF TRANSPORTATION

This Document Has Been Filed By:

NATIONAL EMERGENCY CIVIL LIBERTIES COMMITTEE  
175 Fifth Avenue Suite 712  
New York, New York 10010  
(212) 673-2040  
CRAIG KAPLAN,  
SPECIAL COUNSEL



NEW YORK CITY  
DEPARTMENT OF TRANSPORTATION

BUREAU OF TRANSPORTATION PLANNING AND RESEARCH

40 Worth Street New York, N. Y. 10013

Anthony R. Ameruso, P.E.  
Commissioner

David Gurin  
Deputy Commissioner

July 22, 1982

Honorable Ruth W. Messinger  
Councilmember  
City Hall  
New York, New York 10007

Dear Councilmember Messinger:

In response to your letter of July 15 concerning the possibility of evacuating all or part of New York City, it is important to state at the outset that your questions cannot be answered properly without devoting substantial time and resources to consideration of all the variables involved. Questions of this magnitude would normally require a study of six months or more to produce responsible professional answers. However, I can say that it is certain that NYC residents could not under any circumstances "self-evacuate." Rigorous enforcement would be needed to use all available transportation capacity. Even at that, evacuation would take a great deal of time and pose enormous difficulties.

I am enclosing a memo from traffic engineers on the Department's staff who have attempted in a short period of time to provide as much information as is ascertainable. In response to telephone inquiries from your counsel I add that I have been Deputy Commissioner in charge of Transportation Planning for this Department for the past 4½ years. Mr. Joel Friedman, P.E., Chief of Plans and Surveys, and Mr. Robert McCarthy, Director of Research, each has 10 years of experience as traffic engineers. However, I must add that emergency evacuations are not among the normal planning efforts of the Department.

Yours truly,

A handwritten signature in cursive script, reading "David Gurin", is written over the typed name.

DAVID GURIN

Encl.

To: David Gurin  
From: Robert P. McCarthy, Director of  
Transportation Research  
Joel Friedman, Chief of Plans & Survey

Date: July 21, 1962  
Subject: Evacuation of New York City

The following is an attempt to answer Councilmember Messinger's letter in a short period of time.

1. Question: "...how much of the NYC population, in how short a period of time, could, from a transportation standpoint, be evacuated?"

There are so many assumptions that would have to be made and so many uncertain conditions that meaningful estimates in answer to this question would be impossible.

2. Question: What is the number of vehicles in the City during a working day and at night and what is their total passenger capacity?

TABLE I			
COUNTY	POPULATION	VEHICLE REG.	POPULATION PER VEH.
Bronx	1,169,115	222,503	5.3
Brooklyn	2,230,936	415,958	5.4
New York	1,427,533	201,138	7.1
Queens	1,891,325	646,299	2.9
Richmond	352,121	172,643	2.0
TOTAL	7,071,030	1,658,541	4.3

An additional 136,000 vehicles accumulate in Manhattan daily.

Assuming a 4.5 emergency occupancy rate there could be sufficient capacity to carry the population out of the city. However, this is an abstract and meaningless figure because vehicles and population would not be evenly distributed. In reality some cars might indeed leave the city with 5 or 6 passengers but many would leave with driver only, or even be left behind.

3. Question: How quickly could they all leave?

In an attempt to answer this question, we have calculated the theoretical capacity of streets, highways and bridges outbound from New York City. (Tables II, III, IV). Dividing this capacity by the number of vehicles needed to carry the population combined with a similar analysis for mass transportation, would produce the time needed for evacuation. However, this calculation would be meaningless since the two most basic assumptions on which this calculation is based are unachievable.

The first assumption is that the demand equal the capacity over the period of the evacuation. This is impossible since most people will try to leave immediately and the enormous demand on the system would result in a condition of "jam density".

The second assumption is that the capacity originally calculated can be maintained over the period of the evacuation. This is also impossible because vehicles will break down, run out of gas, collide with each other, etc., thereby causing capacity to continue to decrease.

4. Question: Does the capacity of the available vehicles in any way correspond to the actual population of the City?

The capacity of available private vehicles does not correspond to the population of the City. This is detailed in table I above. The use of private vehicles exclusively would require an average occupancy of more than four persons per vehicle. For Brooklyn and Queens, more than 5 persons per vehicle would be required; while in Manhattan the requirement would be more than 7. These figures are based on vehicle registration and census population. Since the daytime population of the City is much larger and the difficulties inherent with carpooling under such circumstances are enormous, the necessity of using mass transportation is evident.

5. Question: How would this change if there was no access to northern (or any other direction) routes?

The impact of no access to northern or any other routes would increase the time needed enormously as this would significantly reduce the available outbound capacity. Specific estimates would depend on which direction was eliminated.

6. Question: How might construction, vehicle breakdown, panic affect these projections?

An attempt has been made in preparing Tables II-IV to take into account the loss of capacity due to breakdowns, existing roadway construction, accidents, etc. However, other variables affecting an orderly evacuation for which we have no means of estimation, include:

- a panic factor
- desire of everyone to leave at once
- availability of fuel for several million vehicles
- availability of vehicles to population density.

# HOURLY THEORETICAL\* CAPACITY (PERSONS/HOUR)

## CROSSINGS & ROADWAYS AT CITY LINE - OUTBOUND

<u>FACILITY</u>	<u>NUMBER OF LANES</u>	<u>PERSONS/HOUR</u>
<u>Hudson Crossings</u>		
Holland Tunnel	2	7,140
Lincoln Tunnel	3	13,770
George Washington Bridge	6	31,620
<u>Bronx Screenline</u>		
Riverdale Avenue	2	6,120
Broadway	2	6,120
Henry Hudson Parkway	3	15,300
Major Deegan Expwy.	3	15,300
Westchester Avenue	2	5,100
Bronx River Parkway	3	15,300
White Plains Road	1	2,550
Provost Avenue	1	2,550
Boston Road	2	6,120
Hutchinson River Pkwy.	3	15,300
New England Thruway	3	15,300
Shore Road	2	5,100
<u>Brooklyn/Queens Screenline</u>		
Northern Boulevard	3	9,180
Long Island Expwy.	3	15,300
LIE Service Road	2	6,120
Grand Central Pkwy.	3	15,300
GCP Service Roads	2	6,120
Union Turnpike	2	6,120
Hillside Avenue	2	5,100
Jericho Turnpike	2	6,120
Hempstead Turnpike	2	6,120
115th Avenue	1	2,550

\*Assumes 3 persons per vehicle and 85% of maximum capacity.

Linden Boulevard	2	6,120
Southern State Pkwy.	3	15,300
Merrick Road	2	5,100
Sunrise Highway	3	9,180
Rockaway Boulevard	2	5,100
Beach Channel Dr.	2	5,100

Staten Island Screenline

Bayonne Bridge	2	6,120
Goethals Bridge	2	6,120
Outer Bridge	2	6,120
	<hr/>	<hr/>
Total	80	304,980

TABLE III  
 \*  
 HOURLY THEORETICAL CAPACITY (PERSONS/HOUR)  
 MANHATTAN CROSSINGS - OUTBOUND

	<u># of Lanes</u>	<u>P.M. Capacity Persons/Hour</u>
Battery Tunnel	3	9,945
Brooklyn Bridge	3	10,965
Manhattan Bridge	4	11,985
Williamsburg Bridge	<u>4</u>	<u>11,475</u>
Total Brooklyn Sector	14	44,370
Queens Midtown Tunnel	3	7,140
Queensboro Bridge	6	17,595
Triborough Bridge	<u>3</u>	<u>10,455</u>
Total Queens	12	35,190
Willis Avenue Bridge	4	13,770
Madison Avenue Bridge	2	4,335
145th Street Bridge	2	4,080
Macombs Dam Bridge	2	5,100
Washington Bridge	3	7,905
Alexander Hamilton	3	16,065
University Heights Bridge	2	4,080
Broadway Bridge	2	4,590
Henry Hudson Bridge	<u>2</u>	<u>7,905</u>
Total Bronx Bridges	22	67,830
George Washington	6	31,620
Lincoln Tunnel	3	13,770
Holland Tunnel	<u>2</u>	<u>7,140</u>
Total New Jersey	11	52,530
Grand Total	59	199,920

\* Assumes 3 persons per vehicle and 85% of maximum capacity.

TABLE IV

HOURLY CAPACITY THEORETICAL (PERSON/HOUR)

RAIL & RAPID TRANSIT - OUTBOUND

	<u>Rail Rapid Transit</u>	<u>Buses</u>	<u>Railroad</u>	<u>Public Transportation Person/Hour</u>
60th St. Sector	131,800	16,200	29,200	177,200
Brooklyn Sector	146,800	7,600		154,400
LIRR			46,000**	46,000
Queens Sector	111,500	7,000		118,500
New Jersey Sector	<u>22,300</u>	<u>28,600</u>	<u>9,000</u>	<u>59,900</u>
Total	412,400	59,400	84,200	556,000

\*\*Includes Hunters Point and Flatbush Avenue Terminals.