STATE OF NEW YORK

BEFORE THE PUBLIC SERVICE COMMISSION

Consolidated Edison Company of New York, Inc. Steam Rates	)	**Case 03-S-1672**
Consolidated Edison Company of New York, Inc. Gas Rates	)	**Case 03-G-1671**

DIRECT TESTIMONY OF

PAUL CHERNICK

ON BEHALF OF

THE CITY OF NEW YORK

Resource Insight, Inc.

MARCH 16, 2004

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I. Identification and Qualifications

Q1: MR. CHERNICK, PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A1: I am Paul L. Chernick. I am the president of Resource Insight, Inc., 347 Broadway, Cambridge, Massachusetts.

Q2: SUMMARIZE YOUR PROFESSIONAL EDUCATION AND EXPERIENCE.

A2: I received an SB degree from the Massachusetts Institute of Technology in June 1974 from the Civil Engineering Department, and an SM degree from the Massachusetts Institute of Technology in February 1978 in technology and policy. I have been elected to membership in the civil engineering honorary society Chi Epsilon, and the engineering honor society Tau Beta Pi, and to associate membership in the research honorary society Sigma Xi.

I was a utility analyst for the Massachusetts Attorney General for more than three years, and was involved in numerous aspects of utility rate design, costing, load forecasting, and the evaluation of power supply options. Since 1981, I have been a consultant in utility regulation and planning, first as a research associate at Analysis and Inference, after 1986 as president of PLC, Inc., and in my current position at Resource Insight. In these capacities, I have advised a variety of clients on utility matters.

My work has considered, among other things, the cost-effectiveness of prospective new generation plants and transmission lines, retrospective review of generation-planning decisions, ratemaking for plant under construction, ratemaking for excess and/or uneconomical plant entering service, conservation program design, cost recovery for utility efficiency programs, the valuation of environmental externalities from energy production and use, allocation of costs

of service between rate classes and jurisdictions, design of retail and wholesale rates, and performance-based ratemaking (PBR) and cost recovery in restructured gas and electric industries. My professional qualifications are further summarized in Exhibit____PLC-1.

Q3: HAVE YOU TESTIFIED PREVIOUSLY IN UTILITY PROCEEDINGS?

A3: Yes. I have testified approximately one hundred and ninety times on utility issues before various regulatory, legislative, and judicial bodies, including the Arizona Commerce Commission, Connecticut Department of Public Utility Control, District of Columbia Public Service Commission, Florida Public Service Commission, Maryland Public Service Commission, Massachusetts Department of Public Utilities, Massachusetts Energy Facilities Siting Council, Michigan Public Service Commission, Minnesota Public Utilities Commission, Mississippi Public Service Commission, New Mexico Public Service Commission, New Orleans City Council, North Carolina Utilities Commission, Public Utilities Commission of Ohio, Pennsylvania Public Utilities Commission, Rhode Island Public Utilities Commission, South Carolina Public Service Commission, Texas Public Utilities Commission, Utah Public Service Commission, Vermont Public Service Board, Washington Utilities and Transportation Commission, West Virginia Public Service Commission, Federal Energy Regulatory Commission, and the Atomic Safety and Licensing Board of the U.S. Nuclear Regulatory Commission.

Q4: HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE NEW YORK PUBLIC SERVICE COMMISSION?

A4: Yes. I have testified in the following cases:

- Case No. 96-E-0897, on the electric restructuring plan of the Consolidated Edison Company of New York, Inc. ("Con Edison" or "the Company").

- Case No. 99-W-0658, on the rates of United Water New Rochelle.
- Case No. 99-S-1621, on Con Edison's steam rates.
- Case No. 00-E-1208, on the allocation of generation costs between New York City and Westchester County.

Q5: HAVE YOU BEEN INVOLVED IN OTHER UTILITY-PLANNING ACTIVITIES IN NEW YORK?

A5: Yes.

- I co-authored "Comments on the 1991–1992 Annual and Long Range Demand-Side-Management Plans of the Major Electric Utilities" (with John Plunkett et al.), September 1990, filed in NY PSC Case No. 28223, regarding New York utilities' DSM plans.
- On behalf of environmental groups, I reviewed analyses of distributed resources as alternatives to transmission investments for Orange and Rockland Utilities' Western Load Pocket Study (2000–2001) and Con Edison's Rainey to East 75th St. Project Distributed Resource Screening Study (2000).
- I was the City's representative to the Con Edison Steam Plant Collaborative in 2001–2003.
- I was project manager and senior analyst for the New York City Energy Plan (December 2003), and provided technical assistance to New York City for the Energy Policy Task Force Report (January 2004).

II. Introduction and Summary

Q6: ON WHOSE BEHALF ARE YOU TESTIFYING?

A6: My testimony is sponsored by the City of New York.

Q7: WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A7: My testimony primarily reviews aspects of the steam rate increase requested by Con Edison. I also discuss the importance of energy efficiency for both gas and steam usage.

Q8: WHAT ISSUES DO YOU ADDRESS?

A8: I address four issues raised by Con Edison's steam rate filing. The first three relate to the ratemaking for the East River Repowering Project (ERRP), as follows:

- The timing of the rate recognition of the ERRP.
- The prudence of the cost of the ERRP.
- The allocation of costs of the ERRP between electric and steam service.

The final issue concerns the value of development of electric generation at existing steam stations—Hudson Avenue, 59th Street, and 74th Street.

Q9: PLEASE SUMMARIZE YOUR TESTIMONY.

A9: Because the operation of the ERRP is intimately tied to the retirement of the Waterside Plant and the sale of the real estate at Waterside and adjacent properties, the ratemaking for those events should be coordinated. Con Edison's proposed deferral of rate recovery of the ERRP costs would achieve that end, as would the acceleration of expected rate reductions related to the Waterside retirement.

The projected cost of the ERRP has risen from $406 million in the Article X application in June 2000 to $670 million in the present proceeding. Con Edison's explanations for the ERRP cost overruns have not been comprehensive enough to allow for a determination of the prudence of those costs. Nor does the schedule in this proceeding permit a full and fair review of prudence in the construction of the ERRP. While I have no doubt of the

prudence of Con Edison's decision to proceed with building the ERRP, I cannot reach any conclusion regarding the prudence of the costs incurred. Resolving that issue would require a more comprehensive audit of the ERRP costs than can be undertaken in this case.

Con Edison's estimate of the benefits of the ERRP is significantly understated, due to Con Edison's failure to reflect the effects of the ERRP on market-clearing prices for electric energy and capacity. While Con Edison has not prepared separate estimates of the costs and benefits of the ERRP for electric and steam, it appears that the bulk of the operating benefits of the ERRP will accrue to the electric operation. Accordingly, it is essential that the bulk of the fixed costs of the ERRP—and certainly no less than the two-thirds portion that Con Edison has proposed—be allocated to the electric operation, and that a portion of the gain on the First Avenue real estate transactions also be allocated to steam.

Con Edison's analysis of the economics of adding cogeneration capacity at existing steam plants (Hudson Avenue, West 59th Street, and East 74th Street) is incomplete, because it omits any effect of the additional generation on electric energy and capacity prices in the New York City load pocket. When those benefits are included, all the generation projects that Con Edison has evaluated appear to be cost-effective.

Significant new development is planned for the West Side of Manhattan, which may make development of cogeneration at West 59th Street particularly attractive. Con Edison should be implementing a comprehensive and aggressive sales effort to capture as much as possible of the potential for steam use in the West Side development, as well as proposed projects in lower Manhattan.

Q10: WHAT ARE YOUR RECOMMENDATIONS FOR THE COMMISSION IN THIS PROCEEDING?

A10: I recommend that the Commission:

- Accept Con Edison's proposal to defer ERRP-related rate increases until they can be coordinated with the rate reductions related to the retirement of Waterside plant and the sale of the real estate at Waterside and the other First Avenue Properties.
- Defer the recovery of any ERRP costs in excess of the Article X cost estimate, pending the completion of a review of the large increase in costs in that project during construction.
- Adjust the allocation of the benefits of the real estate transaction as necessary to ensure that the steam system is not disadvantaged by the replacement of Waterside with ERRP.
- Require Con Edison to continue analysis of the economics of adding cogeneration at Hudson Avenue, 59th Street and 74th Street, by refining cost estimates and including the benefits associated with lower electric capacity and energy prices.

III. Introduction to the East River Repowering Project Issues

Q11: WHAT IS THE SIGNIFICANCE OF THE ERRP?

A11: The ERRP was originally proposed as a way to replace the electric and steam capacity of the Waterside plant, so that Con Edison could sell Waterside, two other parcels on First Avenue adjacent to Waterside (an office building and a parking lot), and the former steam plant at Kips Bay, which has served in recent years as a fuel-supply facility for Waterside. To simplify the discussion below, I refer to the removal of Waterside from rate base, the sale of the four

properties, and the reflection in rates of the gain on the sale collectively as the "Waterside Transactions."

The primary motivations of the ERRP proposal included reducing the cost of steam supply and mitigating uneconomic electric costs without shifting those costs into steam rates (April 1998 Steam Plan in Case 96-S-1065 at 26). The proposal was also intended to add electric generation to relieve constraints on electric supply to the East River and in-City load pockets. The increased supply will also reduce the market price of electric energy and capacity and increase the viability of competition in the in-City generation market.

Q12: HAS THE IMPORTANCE OF THE ERRP CHANGED IN ANY MANNER SINCE IT WAS PLANNED?

A12: Yes. The benefits of the project to electric customers have increased significantly. Over the last two years, market prices for electric energy have increased dramatically, and the NYISO has imposed the Demand Curve for setting electric capacity prices. The ERRP, like any other incremental generation in the City, is likely to provide much greater benefits to consumers on the Con Edison electric system than was expected in 1998.

Q13: DOES THE HISTORY OF THE ERRP AFFECT THE TIMING OF THE RATE RECOGNITION OF ITS COSTS?

A13: Yes. The original purpose of the ERRP was to replace Waterside. Accordingly, steam rates should not be increased to reflect the costs of ERRP until those rates can be offset by the benefits of reflecting the retirement of Waterside and the gain on the real-estate sale. That end can be achieved by deferring the ERRP costs until the Waterside Transactions are complete or by accelerating the rate effects of the Waterside Transactions. Con Edison has chosen the first alternative. I believe that choice is appropriate.

IV. Prudence of East River Repowering Project Costs

Q14: HOW HAS THE COST ESTIMATE FOR THE ERRP CHANGED SINCE CON EDISON REQUESTED ITS ARTICLE X APPROVAL?

A14: The table below summarizes data from Exhibit VG-1 in this proceeding, and Table 2-2 of Con Edison's Article X filing for the ERRP:

ERRP Projected Capital Costs (Millions of dollars)

	Article X Filing[1] (Table 2-2)	**Current Estimate** (Exhibit VG-1)	**Change**
Site preparation	5	45	800%
Equipment	128	134	5%
Construction	80	201	151%
Engineering, management, etc.	28	76	171%
Steam line	50	77	54%
Gas main	48	27	-44%
Electrical connection	12	14	17%
Overheads, contingency, AFUDC	55	96	75%
Total	406	670	65%

Seven of the eight cost components have increased, by 5% to 800%, for an overall increase of 65%. Such large increases may have occurred despite prudent management, but they require clear explanation.[2]

Q15: WHAT INFORMATION HAS CON EDISON PROVIDED ON THE REASONS FOR THESE INCREASES?

[1]Case 99-F-1314: In the Matter of the Application of Consolidated Edison Company of New York, Inc., for a Certificate of Environmental Compatibility and Public Need to Repower the East River Generating Station to Replace the Waterside Generating Station in Manhattan, New York County, New York, Exh. 1, Vol. I.

[2]Con Edison also refers to another estimate prepared in 2002, for a total of $650 million, and with component cost breakdowns different from those in the current estimate (Response to Staff Interrogatory 227).

A15: Con Edison has provided only general descriptions of the problems, on pages 4 and 5 of the testimony of Con Edison Witness Victor Gonnella and in discovery responses (Responses to City Interrogatories 13 and 24; Staff Interrogatories 221–226, 227, 233, 234, 237, 239, 240, 242, 244, 246, 248). The explanations provided by Con Edison to date are not sufficient to justify recovery of the extensive cost overruns on the ERRP.

Q16: WHAT ADDITIONAL ANALYSIS IS REQUIRED?

A16: The Commission should ensure that a full audit of Con Edison's management of the construction of ERRP is conducted before the cost increases (above the costs included in the Article X estimate) are included in rates. That audit should include, at a minimum, interviews with Con Edison's staff, contractors and consultants, and review of

- Con Edison's documents describing the specification and review of contractor bids;
- communications among Con Edison and its contractors and consultants; and
- internal memoranda on the selection, planning, construction and supervision processes.

The review process could start at any time, but it should continue until the plant is complete and in operation. Con Edison has suggested that the in-service date of the ERRP may slip from October 1, 2004 (Response to Staff Interrogatory 247).

V. Allocation of East River Repowering Project Costs

Q17: HOW DOES CON EDISON PROPOSE TO ALLOCATE THE COSTS OF THE ERRP BETWEEN THE ELECTRIC AND STEAM OPERATIONS?

A17: As explained by Con Edison Witness Rick Shansky, Con Edison proposes to charge the electric operation for all costs required for electric generation, and to charge the steam operation for the incremental costs of steam production, including the heat-recovery steam generators, water treatment, and fuel for the duct burners. This seems to be a reasonable approach to the allocation. As shown below, Con Edison's allocation of ERRP costs is consistent with the flow of ERRP benefits.

Q18: IS THE ERRP COST-EFFECTIVE OVERALL?

A18: Mr. Shansky's Exhibit RS-2 indicates that the benefits of the ERRP (including the benefits of the Waterside Transactions) exceed its costs by about $145 million annually. However, Exhibit RS-2 does not reflect the reduction of market electricity prices due the addition of ERRP's incremental 125 MW of capacity. I estimate that those market effects add about $85 million in capacity savings and $34 million in energy savings to the value of the ERRP for electric customers.

Q19: DOES CON EDISON EXPECT THAT THE ERRP WILL BE COST-EFFECTIVE FOR BOTH THE STEAM AND ELECTRIC OPERATIONS, WITH THE ALLOCATIONS CON EDISON PROPOSES?

A19: Con Edison was not able to provide the equivalent of Exhibit RS-2 separately for the steam and electric operations, so Con Edison's opinion on this issue is unknown. (Response to City Interrogatory 11)

Q20: HAVE YOU SEPARATED THE COSTS AND BENEFITS SHOWN IN EXHIBIT RS-2 BETWEEN STEAM AND ELECTRIC OPERATIONS?

A20: Yes. The following table summarizes my attempt to approximate Con Edison's proposed allocation of the levelized annual ERRP costs and benefits. I have not

included the gain on the Waterside Transactions, because the amounts of the gains on the various portions are not known at this time.

East River Repowering Project Economic Benefits
Levelized Annual Cost (millions of dollars)

line		Total[1]	Steam	Electric	Basis for Allocation to Steam
1	**Recovery of Investment**	$80	$27	$53	*1/3 to steam: Exhibit EJR-1*
2	**Property Tax**	$28	$9	$19	*1/3 to steam: Exhibit EJR-1*
3	**Operations & Maintenance**	$25	$7	$18	*$5.4 M in 2005 (Exhibit EJR-1) × levelizing factor of 1.25 (Exhibit RS-2)*
4	**Total ERRP Fixed Costs**	$133	$43	$90	*[1] + [2] +[3]*
	Avoided Waterside and Steam System Costs				
5	**Recovery of Future Investments**	$19	$1	$18	*$10 M future ERSSS capital × 12%(Exh RS-2)*
6	**Property Tax**	$26	$1	$25	*2.1% of total (Response S -128(a) Attachment)*
7	**Operations & Maintenance**	$24	$10	$14	*$8.3M (Exhibit EJR-1) × levelizing factor*
	Electricity Purchases:				
8	**Capacity Market Benefit**	$85		$85	*125 added MW x $0.09/kW-yr/addedMW x 6,000 MW market capacity × level factor*
9	**Energy Market Benefit**	$34		$34	*0.9% of $62/MWh for 50 GWh market purchases × levelizing factor*
10	**Value of Energy Generated**	$121		$121	*Exhibit RS-2*
11	**Total Avoided Costs (Benefits)**	$310	$12	$298	*[5] + [6] + [7] + [8] + [9] +[10]*
12	**Net Benefit without Fuel**	$177	–$31	$207	*[11]–[4]*
13	**Net Fuel Benefit[2]**	–$41	$80	–$121	*$64M in 2005 (Exh EJR-1) × levelization factor*
14	**Net Economic Benefits**	**$136**	**$49**	**$86**	*[12]+[13]*

NOTES:
[1]*From Exhibit RS-2*
[2]*$200 M in fuel costs minus $159 M in fuel savings, from Exhibit RS-2*

I have added to Con Edison's analysis lines 9 and 10, which show the benefits of the ERRP in reducing the market prices of energy and capacity for all users of Con Edison distribution services in the New York City load pocket.[3] These effects are described in more detail in the next section. Otherwise, the

[3]The ERRP has additional benefits to the electric operations that I have not quantified. It will improve electric reliability and air quality in New York City, southern New York State, and the entire NYISO, by increasing capacity and replacing some very old capacity (Waterside 8 and 9 were installed in 1949) with brand-new generators. The ERRP will also reduce the market prices of energy in the Westchester load zones, and the market price of rest-of-state capacity required for customers in both New York City and Westchester.

table is derived from information in Con Edison's Exhibits and discovery responses.

Q21: WHAT DOES YOUR ANALYSIS OF THE ALLOCATION OF THE ERRP BENEFITS SUGGEST ABOUT CON EDISON'S PROPOSAL FOR ALLOCATING THE ERRP COSTS?

A21: Con Edison's rationale for its allocations appears reasonable, in that costs follow the reason for the investment. In addition, under these allocations, both steam and electric customers are likely to experience lower bills due to operation of the ERRP. As shown above, Con Edison's approach also allocates the costs of the ERRP in a pattern similar to the incidence of the benefits, which further supports the reasonableness of Con Edison's allocations.

Q22: PLEASE EXPLAIN HOW THE ALLOCATION OF THE ERRP BENEFITS SUPPORTS CON EDISON'S ALLOCATION OF THE ERRP COSTS.

A22: As a result of the ERRP, the electric operation will receive most of the non-fuel benefits, while the steam operation will receive the fuel benefit.[4]

By my estimate, electric customers would receive roughly 96% of the non-fuel benefits of the ERRP and the retirement of Waterside ($298 million of $310 million, from line 12 in the table above). Con Edison's allocation of fuel costs offsets this imbalance in the distribution of benefits. The allocation of fuel costs is critical; before fuel costs, the operation of the ERRP *increases* steam costs by $31 million annually, while electric costs are *reduced* by $207 million (line 13 of the table). Adding Con Edison's allocation of fuel benefits to the

[4]The avoided costs include electric benefits that would have been counted as fuel savings when Con Edison was an integrated electric utility. Now that Con Edison purchases most of its power, the energy generated by ERRP is counted as avoided energy purchases, rather than reductions in Con Edison fuel bills.

avoided costs, the benefits of the ERRP would be distributed about one third to steam and two-thirds to electricity (line 11 plus line 13 in the table).

The overall allocation of about one-third of the benefits of the ERRP to the steam operation is consistent with the allocation of one-third of the ERRP fixed costs to steam.

Q23: ARE THERE ANY UNCERTAINTIES THAT COULD AFFECT THE REASONABLENESS OF THE ALLOCATION OF ERRP COSTS?

A23: Yes. First, my conclusions assume that my allocation of the costs approximate those that Con Edison uses for Waterside and proposes for ERRP. If those allocations would be significantly different from those I assumed, the allocations might be inequitable.[5]

Second, for the final allocation to be equitable, and to avoid skewing the allocations in favor of the electric operation, the steam system must receive a substantial portion of the Waterside Transactions.

VI. Economics of Cogeneration at Steam Plants

Q24: HOW DID CON EDISON EXAMINE THE ECONOMICS OF ADDING COGENERATION AT OTHER STEAM PLANTS?

A24: Mr. Shansky describes the process in his testimony, and provides a summary of Con Edison's results in his Exhibit RS-1. I was a participant in the Steam Plant Collaborative, on behalf of the City of New York. Con Edison estimated the capital and annualized costs of a 64-MW combustion turbine with heat-

[5]In some cases, I have estimated the levelized benefit or cost from data for the rate year in this proceeding; if those values are inconsistent with the benefits and costs in Exhibit RS-2 for the year 2005, my estimates may be in error.

recovery steam generator at each of three sites (Hudson Avenue, 59th Street, and 74th Street), and a 266-MW combined-cycle plant at Hudson Avenue (which has more room than the other sites).

Q25: DO YOU AGREE WITH CON EDISON'S CONCLUSIONS REGARDING THE ECONOMICS OF NEW COGENERATION PLANTS?

A25: No. As shown in Exhibit RS-1 and discussed by Mr. Shansky, Con Edison concludes that none of the cogeneration options it investigated are cost-effective compared to the continued operation of the existing boilers. For the combustion-turbine options, Con Edison estimates annual costs of $26.3 million to $33 million and annual benefits of $20.5 to $23.5 million, for net annual costs of $4.9 to $12.5 million. For the combined-cycle plant, Con Edison estimates annual costs of $76.5 million and benefits of $72 million, for a net cost of $4.5 million.

These comparisons value the electric energy and capacity at only the projected market value of those commodities in New York City. This would be an appropriate perspective for a merchant developer, who is simply interested in selling the plant's output. In assessing the viability of cogeneration at the steam plants, however, Con Edison, acting on behalf of its customers, should also consider the effect of the additional electric generation on market prices in the New York City load pocket.

Q26: HAS CON EDISON ESTIMATED THE EFFECT OF ADDITIONAL GENERATION ON MARKET PRICES?

A26: Con Edison indicated on discovery that it has no projections or estimates of the effects of additional in-City capacity on the market prices for energy or capacity. (Responses to City Interrogatories 8 and 9)

Q27: HOW SHOULD THE EFFECT OF ADDITIONAL GENERATION ON MARKET CAPACITY PRICES BE ESTIMATED?

A27: The effect of the additional capacity on the market capacity price depends on the interaction of the so-called Demand Curve adopted by the NY-ISO and the supply curve of capacity bid into the monthly spot market auctions. In the simplest case, the addition of capacity will reduce the price determined by the Demand Curve.[6] For 2004/05, the last year for which it has been developed, the Demand Curve specifies an ICAP price of $151/kW-yr when in-City capacity equals 80% of in-City load, to zero when in-City capacity equals 94.4% of in-City load. Thus, the price falls by $10.5/kW-yr for each percent of in-City load added to in-City capacity. For 2006/07, in-City load is expected to be about 11,517 MW, so each 100 megawatts of additional capacity would reduce the market price by about $9/kW-yr for the 6,000 MW or so that in-City customers must purchase at market prices, or about $54 million annually for each 100 MW of added capacity. Thus, the combustion-turbine cogenerators that Con Edison considered at each of the three sites would reduce the capacity price by about $35 million, while the combined-cycle cogenerator at Hudson Avenue would reduce the capacity price by about $145 million.

Q28: HOW SHOULD CON EDISON HAVE ESTIMATED THE EFFECT OF ADDITIONAL GENERATION ON MARKET ENERGY PRICES?

A28: Con Edison should have run a competitive production-costing model with and without the additional cogenerators (representative increments of supply). It did not do so.

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[6]The effect of any particular capacity addition will depend on the reaction of other market participants, particularly the owners of the three large bundles of divested Con Edison in-City generation.

Q29: CAN YOU ESTIMATE THE EFFECT OF THE ADDITIONAL IN-CITY GENERATION ON IN-CITY MARKET ENERGY PRICES?

A29: For the New York City Energy Plan, Resource Insight used a production-costing model to estimate effect on 2008 in-City prices of adding various resources, including a 500 MW combined-cycle plant. That 500 MW resource reduced the market cost of supplying New York City loads by 3.5%. Assuming linearity, each 100 MW would reduce energy prices by about 0.7%.[7] Con Edison assumes market energy prices of $62/MWh in 2007, and 25% more levelized over a 20-year analysis period.

Applying those prices to New York City energy supplied from the market of about 50,000 GWh/year, the total levelized energy cost would be about $3.9 billion. Therefore, each 100 MW of baseload supply would reduce market energy prices by about $27 million.

Adding any of the combustion-turbine cogenerators (at Hudson Avenue, 59th Street or 74th Street) would reduce in-City energy costs by about $18 million. Adding the Hudson Avenue combined-cycle plant would reduce market energy purchases by about $73 million.

Q30: ARE THESE MARKET EFFECTS ADDITIVE WITH THE MARKET VALUE OF THE ENERGY OUTPUT, AS COMPUTED BY CON EDISON.

A30: Yes.

Q31: WHAT IS THE TOTAL EFFECT OF INCLUDING THE EFFECTS OF THE COGENERATORS ON MARKET ENERGY AND CAPACITY PRICES?

[7]Smaller additions would probably have larger energy-price effects per megawatt, so this is probably an underestimate of the benefits.

A31: Those results are summarized in the below table. All the cogenerators appear to be cost-effective; at Hudson Avenue, the combined-cycle plant would be greatly preferable to the combustion turbine.

In addition to the effects included in the table below, adding these or other baseload plants in the City would tend to reduce the market prices for energy and capacity in the rest of the state.

Con Edison's analysis of each cogeneration option includes the costs of two to four new boilers, which are not needed if the existing boilers are retained. Leaving the existing boilers in place would reduce the costs of the various cogeneration options by $3 million to $6 million annually. The cogeneration systems also provide steam capacity equivalent to one new boiler for each of the combustion-turbine cogenerators and two new boilers for the Hudson Avenue combined-cycle plant.

Economic Impact of New Steam Generation

	59th Street	74th Street	Hudson Avenue	
	Gas Turbine Cogen	*Gas Turbine Cogen*	*Combined Cycle*[a]	*Gas Turbine Cogen*
Steam Capacity (Mlb/h)	1,331	2,162	1,600	1,600
Electric Capacity (MW)	64	64	266	64
*Capital Expenditures (*Millions of 2007 Dollars*)*				
New Equipment	$177	$206	$461	$212
Avoided Cost to Maintain Existing Equipment	–$28	–$30	–$49	–$49
Site Preparation	$18	$21	$46	$21
*Net Capital Cost (*Millions of Dollars*)*	$167	$197	$458	$184
*Annual Charges (*Millions of Dollars per Year*)*				
Recovery of Net Investment	$20.0	$23.6	$55.0	$22.1
Net O&M	$3.1	$2.7	$7.1	$4.4
Net Property Tax	$3.2	$6.7	$14.4	$3.9
Electric Capacity Benefit[b]	–$35.0	–$35.0	–$145.4	–$35.0
Electric Energy Market Effect[c]	–$17.6	–$17.6	–$73.1	–$17.6
Net Fuel and Energy	–$14.7	–$13.8	–$44.1	–$16.8
*Annual Net Impact (*Millions of Dollars*)*	–$41.0	–$33.4	–$186.2	–$39.0

NOTES:
All dollars are 2007-year dollars.
[a]*Construction costs do not include demolition.*
[b]*$9.11/kW-yr per 100 MW for 6,000 MW*
[c]*0.7% per 100 MW for 50,000 GWh at $62/MWh, times 1.25 for levelized costs (Exhibit RS-2)*

Q32: DO THESE ANALYSES DEMONSTRATE THAT THE COGENERATORS WOULD ALL BE COST-EFFECTIVE AND SHOULD BE CONSTRUCTED?

A32: No. These analyses *suggest* that the cogenerators could be cost-effective. As demonstrated by the ERRP, initial cost estimates are subject to later corrections. Specifically, Con Edison's analysis in Exhibit RS-1 explicitly excludes some site-preparation costs for the Hudson Avenue combined-cycle option, and Mr. Shansky points out the preliminary nature of the capital estimates. In addition, the estimates of the fuel, electric energy, and capacity savings, as well as the

effects on market prices, should be reviewed in more detail prior to investment of hundreds of millions of dollars.

While it would be premature to commit to the construction of any of these plants at this time, Con Edison's initial analyses indicate that the potential benefits of these projects to energy consumers are significant, particularly in the context of the need for additional in-City resources discussed in the New York City Energy Task Force Report. Con Edison should move forward to complete the analyses of these potential resources, including their effects on electric market prices, and, if the analyses support it, move forward with construction of cost-effective generation as soon as possible.[8]

Q33: IS THERE ANY OTHER CONSIDERATIONS THAT CON EDISON SHOULD TAKE INTO ACCOUNT AS IT INVESTIGATE GENERATION AT PARTICULAR SITES?

A33: Yes. Locational considerations may make expansion at particular plants especially valuable. Specifically, expansion of 59th Street would facilitate service to a number of construction projects on the West Side of Manhattan whose developers have expressed an interest in taking steam from the Con Edison steam system:

- A garage under construction by New York City's Department of Sanitation at West 57th Street and Twelfth Avenue, which would use about 70 Mlb/hr for space heating, and another 5 Mlb/hr for water heating and miscellaneous uses.
- A second Department of Sanitation garage at 31st Street.

[8]While Con Edison is not generally in the generation business in New York, it continues to have a responsibility to use its existing resources (including the steam-plant sites) to benefit its customers. Con Edison need not build or operate the generation itself, so long as cost-effective plants are brought on line.

- A expansion of the Javits Convention Center, at 34th to 42nd Streets and Eleventh to Twelfth Avenues, planned for 2010. The developer is interested in switching to steam for heating the existing structure, as well as the expansion. The Convention Center would require approximately 300 Mlb/hr of steam.
- The 1,500-room Convention Center Hotel, at 11th Avenue and 42nd Street, using 175 Mlb/hr for space heating, water heating, and possibly chilling.
- The New York Sports and Convention Center (including a museum, retail and restaurant space) proposed for 2009, from 30th to 33rd streets, between 11th Avenue and the Hudson River, using 150 Mlb/hr for heating, 6 Mlb/hr for hot water, as well as potential chilling load.

Increased baseload supply from the West 59th Street may be helpful in supplying these projects and future developments on the West Side of Manhattan, and particularly at the Hudson Yards. Altogether, these projects project a demand of about 700 Mlb/hr, which is over half the steam capacity of the cogeneration plant Con Edison considered for West 59th Street.

Q34: SHOULD CON EDISON BE ENCOURAGING THIS WEST SIDE STEAM DEMAND?

A34: Yes. Increased steam load, especially cooling load, is advantageous for both the steam system (whose fixed costs would be spread over increased sales) and the electric system (which would experience lower load, lower market prices, and higher reliability). Con Edison should be aggressively marketing steam service to major development projects, both on the West Side and in lower Manhattan.

VII. Other Planning Considerations

Q35: SHOULD CON EDISON BE EXPLORING ADDITIONAL OPTIONS FOR ENSURING ADEQUATE SUPPLY AND MINIMIZING COST OF GAS AND STEAM SERVICE?

A35: Yes. Con Edison should be exploring ways to increase the efficiency of energy use by its gas and steam customers, including improvements in equipment efficiency, reduction of loads (such as by improvements in building envelopes) and small-scale combined heat and power. Improved efficiency would help customers reduce their total bills, and free up existing capacity (of gas pipelines into Con Edison's service territory, steam plants, and gas and steam mains) to serve new load. The spare capacity would help defer the need for new investments, or allow electric loads to shift to gas and steam, relieving the overloaded electric system and reducing market prices.

Q36: DOES THIS CONCLUDE YOUR TESTIMONY?

A36: Yes, at this time. Con Edison is still providing discovery responses, so I may need to supplement this testimony.