

## 5,0 SUSTAINABLE DEVELOPMENT POLICIES

All residential buildings constructed in the Riverside South development shall be designed to take advantage of the most efficient cost-justifiable energy conserving systems available. The achievement of this goal shall be the result of a process which will require interchange between the designers of a building and Riverside South Planning Corporation (the Board). This process shall be based on exchange of information, experience gathered in previous buildings, the marketing necessities of each site and the economic requirements of each building.

The process for each building shall have two components: the first shall be a submission to the Board for approval of an analysis of a building's mechanical and architectural design which has, as one of its goals, the lowest cost-justifiable energy usage; the second shall be the preparation, for information purposes, of a report by the developer analyzing the impact of the building upon environmental factors other than operational energy conservation. The intent of this report is to help inform the designers of other buildings of environmental factors involved in the design. The first component shall be referred to as the **Energy Analysis**. The second component shall be referred to as the **Building Impact Study**.

All building designers are to make a good faith effort to design all project buildings so as to minimize, where feasible, long-term environmental impacts and utilize prior Building Impact Studies as a tool to help achieve those results.

### 5.1 Energy Analysis Process

This process creates a framework for professional interchange between the building designers and the Board in the form of meetings and other means of communication. As a result of these meetings a design developed by the applicant will evolve and improve efficiency through an analysis of alternative systems. This **Energy Analysis** is required for each building on the site that exceeds 100,000 SF of Zoning floor area. The process is detailed below.

During the conceptual design stage of the building the appropriate design consultants shall meet with appointed representatives of the Board. This first orientation meeting shall allow the Board to explain their goals and to make energy usage related design suggestions based on previous experience in the development as well as other developments the members of the Board have had direct

experience with. This meeting shall also be for the purpose of achieving a clear and mutual understanding of the process to be followed.

The building design consultants (architect, engineers, etc.) employed by the developer (Applicant) will complete a conceptual design of the building which will define the building's shape, form, character, and functional elements. Subject to constraints of economics and market, this design shall reflect the goals, principles and suggestions received from the Board at the initial meeting. In the design of the exterior windows/wall system the Applicant will initially place priority in the requirements of paragraph 3.7.2 of these Design Guidelines (to minimize or avoid the use of reflective or tinted glass) over the requirements of energy efficiency mandated by this sustainable development section of the Design Guidelines, if such design conforms with the requirements of the New York State Energy Code.

It is understood that certain elements of the building design, including buildings esthetics, layouts of interior spaces, marketing factors, interior finishes, shape and size of windows, construction sequencing, and other factors determined by the Applicant may be designated by him as "Basic Design Requirements". This conceptual design is called the Initial Design.

#### 5.1.1 Initial Design

The Initial Design shall be prepared in sufficient detail to provide the necessary data to use in a computer simulation model. At this point the data will be analyzed on a computer simulation model. The Department of Energy's hour by hour energy use simulation model (DOE 2.1) is one such model. The Trane "Trace 600" is another such model. Among the elements of the design to be considered in the model are the following:

- Exterior skin or envelope of the building, including glass type, wall construction and insulation, roofing insulation, built in shading;
- HVAC system including boilers, heat exchangers, major pumps, chillers, and other major equipment;
- Plumbing system including domestic hot water heaters, major pumps;
- Electrical system including common area lighting, electric heating, control systems for major motors;
- Appliances and non decorative lighting within apartments.

Several iterations of the model will be examined by the

Applicant with various combinations of building design elements. Informal meetings may be held with the Board at this time to request further comments and suggestions. Such meetings, however, are not mandated. The most energy efficient design combination based on the results of this model and the various alternatives studied, will be used for the submission to the Board and compared to the Initial Design prepared by the Applicant. This design is called the Improved Design. This "improved" design must incorporate all feasible energy saving elements that meet the requirements noted below:

- that the incremental cost of the HVAC system and building envelope, in combination, has a payback period of five years or less calculated as noted below;
- that each other element proposed for improving energy efficiency has an incremental cost with a payback period of five years or less calculated as noted below; and,
- that the payback period required for appliances and lighting or other devices that are located within individually metered apartments is to be two (2) years or less calculated as noted below.

The method of calculating the 5 year or 2 year payback period is detailed in Exhibit 5.1, Payback Calculation.

#### 5.1.2 Improved Design

The improved design will be submitted to the Board for formal review and approval. The building designer shall include the calculated costs of the initial and the improved systems in the submission to the Board. Upon receipt of this submission, the Board will review the documentation provided within 15 days and approve the submission for compliance with these provisions if the above noted requirements have been met. If the Board finds that the requirements have not been met, then it will respond with a detailed list of changes requested, or call for a meeting with the Applicant to discuss and explain its position.

All energy saving elements and alternatives proposed by the Board must be designed on the assumption that the changes required to accommodate the energy savings alternatives will not require changes that modify the Basic Design Requirements.

(See Exhibit 5.1, Payback Calculation, for method of calculating the 5 year or 2 year payback analysis).

If the submission of the improved design is not approved, then, based on specific comments and suggestions received from the Board, the procedure described in 5.1.1 and 5.1.2 above is repeated.

The resubmission requires action by the Board in 10 days and requires that approval be granted unless it can be clearly demonstrated by the Board that the Applicant is acting in bad faith.

Approval granted by the Board of a submission made pursuant to the process described herein completes the requirements.

## 5.2. Building Impact Analysis

The building designer shall present to the Board a report dealing with environmental impacts of the building other than energy consumption. This report shall be presented to the Board no later than one year after commencement of construction. The report shall be utilized by the Board as research data for building standards and in providing guidance to the building designers of future sites. This report shall be prepared by an independent consultant with demonstrated expertise in the areas to be analyzed. The report shall be applicable to buildings of 200,000 square feet of zoning floor area or greater, based on 1993 costs, with allowance for CPI increases in the future. The report shall be fully paid for by the developer and shall be limited in cost as per the schedule below.

### Cost Limit Schedule:

a)	1st building	\$25,000
b)	2nd building	\$20,000
c)	3rd building	\$15,000
d)	4th through 10th buildings	\$10,000 each
e)	11th building and on	\$ 5,000 each

This report will include the following elements:

- a) an analysis of environmental and health consequences of Major Materials used in the building. These include: refrigeration/air conditioning (CFCs); insulation; adhesives, caulks, and sealants; paints and applied finishes; carpets and resilient floors; wall coverings, fabrics, and treatments; roofing materials; and wood products. Major Materials are defined as materials used in the construction of the building in sufficient quantity to have an aggregate cost in excess of

- \$100,000.
- b) an analysis of the direct and indirect pollution resulting from consumption of fuels/electricity over the life of the project and the embodied energy of the Major Materials. Overall quantification of Major Materials used as finite or renewable resources and recycled content of Major Materials shall also be provided.
  - c) an analysis of the unique assets of each project site with respect to opportunities for maximizing natural light, ventilation options, solar characteristics, and micro-climate and the reasons for decisions to utilize or reject these assets.
  - d) an analysis of the environmental concerns related to indoor air quality (outside air source and discharge characteristics, HVAC, VOCs, Formaldehyde, Respirable particles, etc.); water conservation strategies and utilization of gray water systems; and quality of water at discharge.
  - e) the design to be utilized for a base building recycling system.
  - f) a post-occupancy environmental master plan describing operation, maintenance, renovation, cleaning, and recycling methods and protocols for project "life" after completion.

When the Applicant is ready to undertake the Building Impact Study, prior to engaging a consultant for this task, the Applicant will submit to the Board a detailed scope of work and background information on the consultant for a preliminary approval. The Board will review the submission and respond to Applicant within ten (10) days. In its review of the submission or in its recommendation with respect to such consultant's qualifications the Board may not mandate that the budget limitations incorporated in this design guideline be exceeded.

It is understood that reports such as this "Building Impact Study" have not previously existed in this industry. Therefore, in consideration of the uncertainties involved in the details of the preparation of such reports, it is agreed that should appropriate professionals proposed by an Applicant not be able to produce reports satisfactory to the Board and such objection by the Board is made known to Applicant at the time of the submission for preliminary approval noted above, then such Applicant's responsibility under this section of the Design Guidelines shall be limited to providing all relevant data on the building(s) in question, in the form of a copy of the plans and specifications, and a monetary contribution to the Board

amounting to the applicable costs in the cost limit schedule above for each building in excess of 200,000 s.f. of zoning floor area. The Board will utilize these funds to prepare a modified **Building Impact Study** and provide information on building impacts to such not-for-profit groups as they deem appropriate. In the event this process is chosen, the delivery by the **Applicant** of a set of plans and specifications together with the payment of the above noted contribution to the **Board** shall completely fulfill the **Applicant's** obligation under this section of the Design Guidelines.

## EXHIBIT 5.1 , PAYBACK CALCULATION

The 5 year (or 2 year) "test" is used to determine if the incremental energy cost savings over 5 years (or 2 years) in using the more efficient building design exceed the incremental cost of buying, installing and operating the more efficient system. The building designer in consultation with the developer's cost estimator shall estimate the cost of energy and the cost of building and operating each alternative system. In determining the cost of two comparable systems the most readily available published list price or actual sales price will be used.

Where such price is not available, the experience of the building's cost consultant or construction manager will be relied upon. The Board may request a copy of the detailed estimating information used to back up cost data in the energy analysis.

The 5 year or 2 year cost payback "test" shall be evaluated in one of two methods:

### METHOD 1

PLAN A = Initial Design  
PLAN B = Improved Design (proposed)

5 year or 2 year cost and energy savings for each design is to be developed as follows:

- a) construction cost: cost of furnishing and installing of applicable element including: materials, labor, start-up, etc. complete including any incidental expenses.
- b) operation cost: present value of costs to operate and maintain system for five years (or 2 years) from system start-up, including labor and other incidental operating costs, but not including energy use costs.
- c) energy cost: present value of total energy costs including applicable taxes, demand charges and related costs for a 5 year (or 2 year) period starting at system start-up.

Each element of Plan A and Plan B shall be estimated for construction, operation and energy costs.

For the purpose of calculating the present value of future dollars, the interest rate shall be the rate actually being paid by the developer for the project under review. The following formula will be used:

Cost of Plan A = construction cost + operation cost + energy costs  
Cost of Plan B = construction cost + operation cost + energy costs

If Cost B is less than Cost A then the proposed Plan B has complied with the 5 year or 2 year "test" for the purpose of this design guideline.

#### METHOD 2

PLAN A = Initial Design  
PLAN B = Improved Design

- a) the increment in construction cost (B-A) is identified as described above.
- b) the increment in operation cost (B-A) is identified as described above.
- c) the increment in energy use (B-A) is identified as described above. If the sum of the three increments is less than 0 (zero) then the proposed design meets the requirements of the 5 year or 2 year "test".