City Building Simulation System - Functional Requirements

1. Core Gameplay Mechanics

1.1 Turn-Based System

• Players can perform actions during their turn

• Each turn consists of: Action Selection, Building/Development, City Growth Updates, and Event Processing

• Buildings take one turn to start construction and become functional the following turn

1.2 Resource Management

• Players must manage:

- Power supply and consumption
- Water supply and consumption
- Waste management
- Sewage system
- Building resources
- Financial resources (taxes and income)
- Housing space
- Commercial space
- Industrial capacity

2. Building System

2.1 Building Categories

A. Residential

- Houses
- Apartments
- TownHouses

B. Commercial

- Shops
- Offices

C. Services

- Hospitals
- Police stations
- Fire departments

D. Industrial

- Factories
- Warehouses

E. Entertainment

- Theaters
- Bowling alleys
- Bars

F. Landmarks

- Parks
- Monuments

2.2 Building States

• Buildings progress through four states:

1. Placed
2. Under Construction
3. Complete
4. Demolished

• Each state has specific resource consumption patterns and effects

3. Population Management

3.1 Citizen Behavior

• Citizens can:

- Choose random entertainment activities
- Migrate in/out of the city
- Reproduce based on satisfaction levels
- Require housing and employment
- Die or evacuate due to lack of essential services

3.2 Population Growth Mechanics

• Immigration based on:

- Satisfaction levels
- Job availability
- Housing space
- Service availability
- Transport infrastructure capacity

3.3 Satisfaction System

• Citizen satisfaction is affected by:

- Access to services
- Entertainment availability
- Infrastructure quality
- Resource availability
- Environmental conditions

4. Event System

4.1 Random Events

• System generates random events including:

  - Sickness outbreaks

  - Robberies

  - Fires

• Event outcomes depend on available services

• Events can affect citizen satisfaction and population

5. Infrastructure Management

5.1 Utility Systems

• Power distribution

• Water supply

• Waste management

• Sewage processing

5.2 Service Coverage

• Each service building has an area of effect

• Service availability affects citizen satisfaction

• Inadequate services can lead to citizen death or evacuation

6. Economic System

6.1 Revenue Sources

• Tax collection

• Commercial income

• Industrial production

6.2 Resource Economy

• Buildings consume resources

• Factories produce building resources
• Warehouses store resources
• Resource management affects city growth

7. Governance System

7.1 Player Actions
• Set tax rates
• Implement policies
• Manage services
• Control development
• Allocate resources

8. Future Development Areas

8.1 Planned Features
• Enhanced transport system
• Additional governance policies
• Tax management system
• Policy response system

9. Technical Requirements

9.1 System Performance
• Must handle multiple concurrent systems:
  - Building state management
  - Population dynamics
  - Resource calculations
  - Event processing
  - Satisfaction updates

9.2 Data Management

- Track individual citizen status
- Monitor building states
- Calculate resource flows
- Update satisfaction metrics
- Process random events