

## H APPENDICES

Appendix 1: Revised Memorandum of Understanding

Appendix 2: Revised IMPACT System Standards

Appendix 3: Environmental Resource Report Exhibit



**CIVANO IMPACT SYSTEM  
REVISED MEMORANDUM OF UNDERSTANDING  
ON IMPLEMENTATION AND MONITORING PROCESS**

December 8, 2003

The parties to this Revised Memorandum of Understanding (the "Revised MOU") are the City of Tucson (the "City") and The Community of Civano, LLC (the "Developer"), Case Enterprises Development Corporation, a Connecticut Corporation (Case), and Pulte Homes, Inc., a Michigan corporation (Pulte Homes) collectively the "Developer" or "Developers"). The Community of Civano, LLC was the master developer for the initial development of Civano. The City and the Developers entered into the Revised Civano Development Agreement on December 8, 2003, which established Pulte Homes as the Master Developer. The terms and definitions in the Revised Civano Development Agreement apply to this Revised Memorandum of Understanding (the "Revised MOU").

**1.0 GOAL**

The goal of the Civano project is to create a mixed-use community that attains the highest feasible standards of sustainability, resource conservation and development of Arizona's most abundant energy resource – solar – so that it becomes an international model for sustainable growth. The State of Arizona through the Department of Commerce, Energy Office provided significant financial support for the early planning and design of Civano. This funding was provided at Civano's inception explicitly in support of the demonstration of the use of solar energy as a guiding, organizing principle of community development.

Another major goal of Civano is to foster creativity and innovation in the construction of Civano. Establishing clear performance achievement levels and then allowing the Developer, designers and builders flexibility in the method of achieving the standards best advances this goal.

The sustainable growth objectives of Civano have been amplified and expanded in the Civano Neighborhood 1 Planned Area Development, adopted by City Ordinance No. 8970 dated October 20, 1997, as revised on October 12, 1998, and subsequently renewed (the "Neighborhood 1 PAD"), to include the goals of Building Community, Connection with the Land, Respect for Climate and Regeneration.

The goal of the this Revised MOU is to confirm the strategies for sustainable development, energy conservation, and economic feasibility of the design and technologies used to implement and monitor the resource conservation and other project goals set forth in the Civano IMPACT System adopted on October 2, 1995 (the "IMPACT System"), as refined in the Revised and Restated Civano IMPACT System adopted on December 8, 2003 (the "Revised IMPACT System"), all of which contribute to the basis of the Civano Project. The IMPACT System and Revised

IMPACT System establish baseline standards, "Performance Targets" and "Specific Requirements" to achieve the resource conservation and other project goals.

## 2.0 BACKGROUND

The City, in cooperation with the Arizona State Land Department ("ASLD"), the Metropolitan Energy Commission, and with significant input from the public, established the general development guidelines for Civano in 1991. These were implemented through a planning process, the adoption of conditions upon the sale of the state trust land (the "State Land Patent Conditions"), and conditions adopted as part of the rezoning of the property by the City under Ordinance No. 7697, dated October 7, 1991, amended by Ordinance No. 8971 dated October 20, 1997 (the "Rezoning Conditions"), and as further amended by the adopted of the Neighborhood 1 PAD. These conditions included resource and energy conservation targets as well as community planning targets such as preservation of open space, and encouraging a greater mix of uses.

The City adopted the IMPACT System to define and administer the resource conservation goals and to maintain Civano's position on the leading edge of sustainable development. The IMPACT System and Revised IMPACT System as adopted (and as may be subsequently amended) clarify the City's policies and requirements for the Civano Project:

### CITY OF TUCSON GUIDELINES FOR DEVELOPERS AND BUILDERS: THE IMPACT SYSTEM (Integrated Method of Performance and Cost Tracking)

The IMPACT System is a means of organizing resource efficiency goals and stakeholder cooperation for sustainable community development and for measuring progress toward those goals over time. It is intended to be a cyclical process that:

- Is grounded on metropolitan Tucson baseline conditions that are normally documented and periodically updated by community organizations.
- Is responsive to community policy priorities that will change over time.
- Uses performance targets and specific requirements that exceed baseline conditions without detrimental cost penalties.

- Uses collaboration among stakeholders to reach common goals.
- Measures development performance and costs to evaluate target achievement.
- Enables revisions as baseline conditions improve, and as new targets become technically and economically feasible.

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While the initial responsibility for meeting the Revised IMPACT System Standards will lie with the Developer and the builders, responsibility for administering the Revised IMPACT System over time will lie principally with CCA. The CCA is the non-profit corporation created pursuant to the Amended Covenants, Conditions, and Restrictions for Civano: The Tucson Solar Village, recorded November 21, 1998, at Docket 10915, Page 639 of the Pima County Records (the "Civano CC&Rs") for the purpose of administering the CC&Rs, as described in the Civano Master Plan, adopted by ASLD on March 5, 1992, as amended by City Ordinance No. 8971, dated October 20, 1997 (the "Master Plan"). The CCA membership will include all owners of property within Civano.

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The IMPACT System clarifies the Rezoning Conditions and will guide the City's review of subdivision and development plans and initial building permit applications.

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The City of Tucson is committed to achieving the original performance targets for Civano over time and does not intend to accept lower performance levels in the initial Memoranda of Understanding.

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The IMPACT System established baseline standards and "Performance Targets" and "Specific Requirements" to achieve the conservation and sustainability goals. These Performance Targets and Specific Requirements are collectively referred to as the "IMPACT System Standards."

The City subsequently entered into the Civano Development Agreement (the "Development Agreement") in July 1996 to reaffirm the goals and principles of Civano to provide the framework for cooperation between the City and the Developer in the development of Civano. The Development Agreement required the parties to negotiate a Memorandum of Understanding to address the implementation and

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monitoring aspects of the IMPACT System Standards that underpin the Development Agreement.

The City and the Developer have subsequently entered into the Revised Development Agreement to reflect the initial goals, proposals and agreements for Civano, the progress made over time, and the modifications, clarifications and revisions to the initial goals, proposals and agreements as the parties have deemed necessary and appropriate. The implementation and monitoring responsibilities described in this Revised MOU update, clarify and supplement those in the original MOU and IMPACT System and parallel the changes in the Revised Development Agreement.

The Neighborhood 1 PAD was adopted by the Mayor and Council to further guide the initial development. The Neighborhood 1 PAD, along with the original and Revised Development Agreement, the Rezoning Conditions and State Land Patent Conditions, provide the framework for developing Civano as a leading sustainable development.

The parties recognize that implementation of the IMPACT System Standards and achievement of the Civano Performance Targets will require a multifaceted approach. While some of the Performance Targets are appropriately addressed by compliance with Specific Requirements for planning, development and construction phases. Other Performance Targets are necessarily dependent upon the actions and conduct of future residents of Civano and must be assessed over time. Initially implementation of the Specific Requirements will involve the review and certification of compliance by the City and by the Developer.

As Civano develops it is anticipated that the parties will have additional information from advances in technology, and the monitoring of the implementation of the Revised IMPACT System may affect future implementation strategies, requirements and methodologies. It is also anticipated that as Civano develops, the residents will begin to actively participate in the shaping and implementation of the Performance Targets and Revised IMPACT System through their actions and through the CCA.

### 3.0 OUTLINE OF PROCESS

#### 3.1. Sustainable Development as a Process

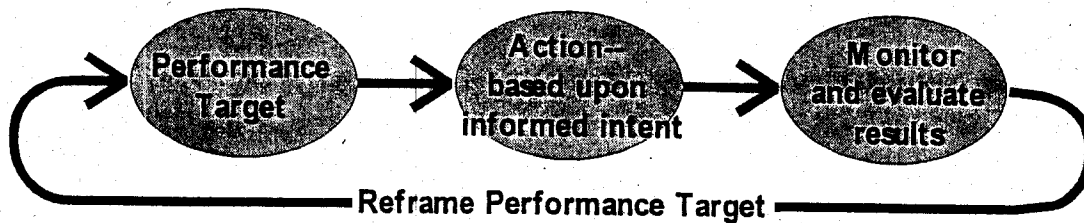
The term "sustainable development" has been defined as "a process of change in which the use of resources, the direction of investment, the orientation of technological development, and institutional change all enhance potential to meet human needs both today and tomorrow."<sup>1</sup>

Conceptually, the IMPACT System Standards are the measuring sticks on which all actions are based and by which performance will be measured. In addition to meeting Specific Requirements and moving toward achievement of all the established

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<sup>1</sup> Sustainable Development: A Guide to Our Common Future, United Nations World Commission on Environment and Development. 1987.

Performance Targets, performance must include success in the marketplace. It is understood that the success of Civano will require the good faith commitment and diligent actions by all parties concerned. This approach requires an integrated, flexible response to meet the mandated targets and requirements. This process will be supported and documented by continued monitoring and evaluation of its effectiveness.



### 3.2. Relationship of Plan Review to Monitoring and Evaluation

The underlying principle, as outlined above, is that compliance with the performance targets as described herein will be demonstrated by the construction and subsequent use of site improvements and the development of related programs. Buildings, site improvements, and related programs will be designed to meet or exceed the IMPACT Systems Standards. The Developers and individual builders cannot be sanctioned, however, if actual performance does not meet standards where the personal behavior of occupants affects how buildings function. Plan review will insure that, in accordance with Section 7, initial development and construction meets Specific Requirements applicable at that stage. Subsequent monitoring of performance in accordance with this Revised MOU will provide the basis for determining the success in meeting the Revised IMPACT System Standards as well as the basis for improving future conservation and sustainability strategies and standards.

### 3.3. Impact System Evaluation Committee Established

An IMPACT System Evaluation Committee (the "Civano IMPACT Committee") is hereby established to include a minimum of one representative of the Master Developer, one representative designated by the City Manager who will serve as the Project Manager and one CCA representative selected by the CCA. Commencing January 1, 1999, the Civano IMPACT Committee will meet at least every six months to review the Revised IMPACT System Monitoring Reports to track progress and compliance with the Revised IMPACT System Standards, identify issues of concern, and seek solutions to problems encountered, all in a manner consistent with the success of the Civano Project.

The parties shall further seek the cooperation of the University of Arizona, the State of Arizona Department of Commerce, Energy Office, Tucson Electric Power, other utility companies, energy providers, environmental experts, environmental engineers and similar independent agencies for the monitoring, evaluation and proposed





- reducing solid wastes;
- reducing auto travel and resultant air pollution;
- creating a balance of jobs and housing;
- creating affordable housing, meeting needs of on-site working population; and
- demonstrating the economic feasibility of resource conservation and sustainable development as a model for growth in Civano.

#### 3.4.7. Resulting linkages to central and inner city redevelopment.

The City will provide supplemental information to be attached to the Monitoring Report which includes a status report on progress toward meeting the City's strategies and responsibilities enumerated in this Revised MOU.

The form of the Monitoring Report will be written, with appropriate graphics, for wide distribution.

#### 3.5. Periodic Review

Commencing two (2) months after the initial Monitoring Report and continuing thereafter as described in the Revised Development Agreement, the City and the Civano IMPACT Committee shall consider whether any amendments to this Revised MOU are necessary to achieve the maximum practical compliance with the Revised IMPACT System Standards. This shall include review of the baselines established in the Revised IMPACT System, the methods of monitoring and establishing compliance, the strategies and Specific Requirements which are appropriate to achieve compliance, the integration of new technology and other matters which are appropriate to maintaining the role of Civano as a leading demonstration of resource conservation and sustainability. Where it is determined that an amendment to this Revised MOU is appropriate, the parties shall proceed in accordance with Section 8 herein.

### 4.0 JOINT CITY AND COMMUNITY OF CIVANO STRATEGIES AND RESPONSIBILITIES

#### 4.1. Description of Joint Strategies and Responsibilities

In recognition of the need for cooperation in achieving the goals described in the Revised IMPACT System, as may be revised from time to time, and this Revised MOU, the City and the Developer understand that the following strategies and responsibilities are important to the success of Civano as a sustainable community:

- 4.1.1. Building plans, development plans, specific plans and similar requests will be prepared, submitted and reviewed in a timely and complete manner.
- 4.1.2. The Civano Model Energy Code/Tucson Sustainable Energy Standard will be reviewed and considered by the City and the Developer for periodic updating as new or improved technologies become available.
- 4.1.3. The parties will explore with the Arizona Department of Commerce, Energy Office and other appropriate agencies, the initiation of programs to further encourage, develop, use, and monitor the beneficial applications of solar energy.
- 4.1.4. Grant funding should be pursued to undertake studies and analysis of the role of landscaping and coloration in building and paving cooling strategies.
- 4.1.5. Street standards will be reviewed to determine the appropriate methods to significantly reduce the "urban heat island" effect, including the effect of reducing paved surfaces, integrating landscaping for shading of pedestrian, bicycle and automobile parking areas, and allowing alternative, less heat-absorbing paved surfaces in a manner consistent with public safety and handicapped accessibility requirements.
- 4.1.6. The parties will cooperate on demonstration projects involving the private and public uses of developing technology; e.g., solar photovoltaic powering of residential homes and of on-site municipal streetlights or pumps, including pursuing grants and other funding for renewable technology demonstration projects.
- 4.1.7. The parties will explore the installation of filtration systems for reclaimed water to meet ADEQ standards for full body contact and to permit use of reclaimed water for vegetables to be consumed raw. The parties shall further explore obtaining the adoption of any necessary revisions to existing standards to permit these uses.
- 4.1.8. The parties will cooperate to designate and provide garbage and recycling pick-up to all uses, including multifamily and commercial, in conformance with City plans and designs incorporated in the Neighborhood 1 PAD and development plans.
- 4.1.9. The City will consider the designation of the proposed Civano recycling center as a "neighborhood recycling center" within the City's overall program.

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- 4.1.10. The parties will explore the use of Civano as a pilot site for demonstrating new programs and advanced recycling and composting techniques.
- 4.1.11. The parties will cooperate to formulate an overall solid waste plan for Civano particularly as it relates to waste reduction and diversion goals.
- 4.1.12. The parties will cooperate to develop a transit plan for Civano and the surrounding area, including exploring with the State of Arizona Department of Transportation, the City's Department of Transportation and other affected property owners, a transportation corridor plan for Houghton Road.
- 4.1.13. The parties will cooperate with the Greater Tucson Economic Council and other agencies to actively recruit employers for location in Civano.
- 4.1.14. The City will consider land-use designations in the vicinity of Civano that incorporate mixed uses, complement Civano, and encourage sustainable development.
- 4.1.15. The parties will explore programs to provide assistance to developers/builders who participate in low and moderate-income housing programs.
- 4.1.16. The parties will explore the application of the landscape and xeriscape requirements set forth in the City's Land Use Code, Section 3.7.2 to all uses in Civano and to all lot areas consistent with the goals of the Master Plan and will further explore the integration of personal and community gardens, orchards and food producing landscaping into these requirements.
- 4.1.17. The parties will cooperate to develop a plan for the Pantano Riverpark which integrates adjacent planned open space and recreation areas in Civano.
- 4.1.18. The parties will cooperate to develop standards which more effectively utilize natural drainage areas and private open space areas for water harvesting and retention, in order to encourage native plant growth, recharge aquifers and reduce the magnitude of flood flows and erosion hazards.
- 4.1.19. The parties will cooperate in a manner consistent with the Revised IMPACT System and the Revised Development Agreement to achieve the goals of this Revised MOU.

## 5.0 SPECIFIC PROCEDURES FOR IMPLEMENTATION

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**5.1. Master Developer Requirements Prior to Issuance of Residential Building Permits**

The Master Developer shall:

- 5.1.1. Maintain Development Design Guidelines (the "Design Guidelines") (as they may be amended) to assure that provisions are made to meet the Revised IMPACT System Standards. The CCA may, in coordination with the Master Developer, amend the Design Guidelines in accordance with the CCA governing documents.
- 5.1.2. Maintain the Certification Committee as a part of the Design Review Committee ("DRC") (as provided in the Civano CC&Rs). The Certification Committee shall include a DRC representative, a licensed architect, or a licensed engineer, and a CCA representative.
- 5.1.3. Establish exterior water budgets, monitor water consumption, and develop a contingency program to achieve compliance with the budgets if water conservation targets are not met. Utilize City-provided reclaimed water in landscaping for common areas and non-residential uses, and provide rainwater harvesting, graywater systems, or other alternative irrigation systems not dependent on potable water in residential uses.
- 5.1.4. Establish provisions for utilizing non-potable water for all outdoor irrigation systems and for utilizing efficient and effective, non-pooling drip irrigation systems for all landscaping. This provision shall not require the use of reclaimed water in gardens for the production of raw vegetables for human consumption unless such use is approved by the State of Arizona.
- 5.1.5. Establish interior water budgets, monitor water consumption and develop a contingency program to advance compliance with the budgets if water consumption targets are not met for each building, and design the plumbing systems accordingly that will reduce the interior use of water in residential structures to 53 gallons per person per day and to 15 gallons per person per day in non-residential structures. The guidelines shall specify the manner in which water use has been calculated and the principal measures to be taken to meet these budgets.

**5.2. Area Planning, Subdivision and Planned Area Development Review**

Certain requirements apply to development in a broader context than the specifications for a single structure or lot or a specific point in time. These must be reviewed with consideration for the progress in existing development as well as the

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prospective development as set forth in the Master Plan. City development decisions on the Civano project, which will be viewed in this broader context, are rezonings, planned area developments ("PADs"), specific plans, subdivision plats, development plans and amendments thereto, not including plans applicable to a single family lot. Interpretation of compliance with these requirements shall be analyzed in the same manner in which the Tucson General Plan, existing area plans and neighborhood plans are applied to prospective development. Any dispute regarding these interpretations may be resolved pursuant to Section 5.4.

General planning areas, not including plans applicable to a single family residential lot, such as development plans, subdivision plats, rezonings and PADs shall be designed to meet the following Revised IMPACT System Standards, as applicable for the scale of the project, in addition to all other applicable code requirements. The City shall review all such plans in accordance with Section 7. Compliance shall be consistent with the Master Plan and may take into account future development as provided for in the Master Plan.

Monitoring Reports that document compliance with the Revised IMPACT System shall be prima facie evidence of prior compliance. Any dispute regarding these interpretations may be resolved pursuant to Section 5.4.

- 5.2.1. Land may be designated and set aside by the Developer for the design and construction of demonstration projects, as more fully described in Section 6.0, which are compatible with the technologies being offered by Civano.
- 5.2.2. Site design and grading plans shall limit site clearance on residential lots to preserve existing desert vegetation and maximize natural drainage in a manner consistent with the grading plans approved with the Master Plan and any approved PAD or specific plan. The exact requirement for preservation of existing desert vegetation shall be determined after completion of drainage and engineering studies.
- 5.2.3. Location of a community pool to be constructed early in the development of each phase or neighborhood (as those terms are used in the Master Plan) by the Developer and/or individual builders in an attempt to discourage construction of private pools.
- 5.2.4. Inclusion of commercial services and other mixed uses with residential developments, consistent with the adopted Master Plan and subsequently-adopted PADs or specific plans, to provide access from residences to commercial or employment areas by walking, bicycling or similar alternatives to automobile use.
- 5.2.5. Provision of a central location for access to city bus routes or alternative transit shuttle services, consistent with the adopted Master

Plan and subsequently adopted PADs or specific plans. Consideration by the City and SunTran of the extension of bus routes to Civano during the development of each Phase or Neighborhood or, as one of several possible alternatives, a shuttle service to the nearest Sun Tran express route and/or park and ride lot.

- 5.2.6. Provision of a pedestrian and bicycle-built environment, which is consistent with the requirements to provide access to disabled persons. Each development phase will provide for a majority of through streets (versus cul-de-sacs), construction of a system of sidewalks or bike or multi-purpose paths and nonresidential uses which have orientation access and emphasis on pedestrian /bicycle linkages rather than auto linkages.
- 5.2.7. Provision for recyclable materials pick-up areas consistent with requirements of the City Solid Waste Department.
- 5.2.8. Provision of a minimum ratio of 300 square feet of non-residential floor area for every two dwelling units constructed. This requirement may be determined based upon the full development of Civano in accordance with the Revised Development Agreement and Revised IMPACT System standards.
- 5.2.9. Design of telecommunications capacity to enable the expansion of fiber optics or similar infrastructure to all commercial and home office locations. This may be met by providing conduit capability during construction.
- 5.2.10. Identification of the provision for 20% of the dwellings to meet the goal for affordable housing as defined in the IMPACT System Standards to the extent that assistance is available from public agencies, foundations, and other sources to finance and construct affordable housing. The construction of affordable housing shall be reasonably uniform throughout the development of Civano. The Civano development as a whole shall approximately conform with the 20% requirement at the time 500 residential dwelling units have been constructed, at the time 1,000 dwelling units have been constructed, at the time 1,250 dwelling units have been constructed, and at full buildout of Civano.
- 5.2.11. Extension of reclaimed water lines to all common areas and nonresidential uses. Builders of residential units will provide reclaimed water, or rainwater harvesting, or graywater, or other alternative irrigation system to unit buyers. Exposed hose bibs for reclaimed water shall be discouraged and if used shall be clearly identified prior to sale of the property.

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5.2.12. Functioning systems using reclaimed water, graywater or rainwater harvesting or other alternative irrigation system not dependent on potable water shall be provided for all landscape irrigation except that:

5.2.13.1 the limited use of potable water for personal and community gardens producing vegetables to be consumed raw will be allowed within the overall landscape design until it is determined that such use of non-potable water is safe.

5.2.13.2 potable water may be used for temporary and periodic flushing of the reclaimed system if necessary to assure efficient operation of irrigation systems, upon notification to and consent by the City, which consent shall not be unreasonably withheld.

5.2.13. All landscaping which is required for public streets adjacent to residential properties shall be limited to drought tolerant plants as established by City Development Services.

### 5.3. Building Plan Requirements and Review

All plan submittals for building permits shall be determined in accordance with Section 7 to meet the following requirements in addition to all other applicable codes.

5.3.1. All building permit applications shall be certified in accordance with Section 7.0 as complying with the following:

5.3.1.1 Residential building plans shall provide a certification that the plans as submitted provide for a total energy use through the building shell, heating and cooling systems ("building energy use") of at least a 65% reduction for each dwelling from the 1990 Model Energy Code annual energy use baseline, equivalent to a 50% reduction from the 1995 Model Energy Code annual energy use baseline, commencing at the time of initial residential occupancy. The certification shall be in the form attached hereto as Exhibit 2.

5.3.1.2 Non-residential building permits shall provide a certification that the plans as submitted provide for a total energy use through the building shell, heating and cooling systems ("building energy use") of at least a 55% reduction for each structure from the annual energy use by a comparable non-residential structure in 1990 as established by the Model Energy Code. The certification shall identify the 1990 level used, the method of determining that level and the source material documenting that level. The energy conservation

shall commence at the time of initial occupancy. The certification shall be in the form attached hereto as Exhibit 2.

- 5.3.1.3 Building plans shall identify the manner in which the proposed structures will be designed for the use of solar energy through the orientation for passive heating and cooling purposes, consistent with Civano's goals.
- 5.3.1.4 Plans shall incorporate some beneficial use of solar energy to reduce the energy demands from heating, cooling and interior water heating. Solar devices such as currently found in A.R.S. § 44-1761 shall qualify as beneficial uses of solar energy will satisfy this requirement.
- 5.3.1.5 Landscape and hardscape coloration and/or vegetation shall be used to reduce the microclimate temperature adjacent to the structures. The average reflectivity of all major landscape and hardscape surfaces must be 0.5 or greater on the albedo scale or result in equivalent energy savings.
- 5.3.1.6 Describe a program that identifies procedures for preserving construction materials for recycling during construction and for the use of recycled construction materials in construction.
- 5.3.2. Structural calculations demonstrating that the roof will support solar photovoltaic, solar thermal power generation and solar water heating systems of sufficient size for the potential uses of the building.
- 5.3.3. Location and installation of plumbing stubouts for solar hot water heaters shall be required and shown on all residential and commercial buildings.
- 5.3.4. All structures shall be constructed so that there is minimal obstruction of solar light for adjacent properties at the level of a roof of a single story building (fifteen (15) feet) constructed at the legally permitted set back from the property line.
- 5.3.5. Where reclaimed water, graywater, or other alternative irrigation systems are to be installed, two water supply systems shall be shown: one for potable water and one for reclaimed or other non-potable water for landscaping or similar external uses. Provisions may be made for rainwater harvesting and/or graywater use for landscaping in conformance with existing codes.



- 5.3.6. Non-residential space conditioning system cooling towers rated at one hundred tons or more of cooling capacity shall comply with ADWR water conservation requirements.
- 5.3.7. Solar thermal water heaters or other devices or technologies which achieve equivalent energy savings in the heating of hot water shall be included on all model homes for demonstration purposes and as options on all other homes.
- 5.3.8. Plans shall provide for built-in recyclable separation features and storage of hazardous materials.
- 5.3.9 plans for each structure shall identify some recycled material used in the construction of the structure.
- 5.3.10 All structures shall minimally comply with the Civano Model Energy Code/Sustainable Energy Standard as adopted and as it may be amended.

#### 5.4. Expedited Review of Interpretations

The City will establish a review committee for the resolution of all interpretive or technical disputes in accordance with Section 6.2.1 of the Revised Development Agreement (the "Interpretive Review Committee"). The Developer or the City may submit any matter to this Interpretive Review Committee for a determination as to whether the matter is one of interpretation or whether there exists an established requirement which is subject to an established administrative appeal procedure. Where the matter is one of interpretation, the Interpretive Review Committee shall determine the interpretation to be applied. The Interpretive Review Committee shall consist of a designee of the City Manager, a designee of the City Attorney's office and a designee of the director of the department or departments which is/are responsible for the review and/or enforcement of the matter being submitted. The Interpretive Review Committee shall reach a decision on the matter or shall state the reason why a decision cannot be made within five working days of the submission. The Developer may appeal (a) any such decision or (b) the Interpretive Review Committee's failure to reach a decision within five working days to the City Manager pursuant to Section 6.2 of the Revised Development Agreement. The Developer agrees to comply with any decision that is not appealed to the City Manager within five working days of the decision.

#### 6.0 DEMONSTRATION PROJECTS

The parties recognize that development of innovative designs and technologies for resource conservation and use of solar energy are important goals of Civano. In order to encourage such innovation, the Developer may set aside a limited number of residential or commercial lots for construction of demonstration buildings. Such

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buildings shall not be subject to the requirements of Sections 5.2 and 5.3 at the time of initial planning or permit review but shall provide descriptions of the manner in which these requirements will be met. Such designated structures shall be reviewed after one year for compliance with the resource conservation requirements of the Revised IMPACT System. The buildings shall not be sold or otherwise conveyed to private parties other than the Developer, unless such buildings are certified as set forth in Section 7 to comply with the resource conservation requirements of the Revised IMPACT System Standards and the requirements of Section 5.3. Such demonstration buildings may be leased or otherwise occupied without certification of compliance. If in compliance with the requirements of Section 5.3, the demonstration projects may be marketed to private parties. The Developer shall provide a notice that a building was constructed pursuant to this section to any prospective user or purchaser prior to the use, lease or sale of the structure to the public.

## 7.0 CERTIFICATION OF COMPLIANCE

The parties recognize that the Revised IMPACT System includes both Performance Targets to be reached over time, as provided in Sections 3 and 4, and specific resource conservation requirements, as provided in Section 5, which establish minimum thresholds for performance and which are to be met commencing with the initial development of Civano in order to establish progress toward achieving the Performance Targets. The Developer agrees to establish this compliance through the Monitoring Report and compliance with Specific Requirements as set forth below.

7.1. During the initial development of Neighborhood 1 of Civano, and thereafter during the development of Civano until changed by mutual agreement of the parties, the Developer shall provide to the City a certification based upon information provided to it by a professional chosen by the Developer that the plans subject to the certification are in compliance with the conservation requirements set forth in Section 5.3.1. The form of the certification is attached as Exhibit 2.

7.1.1. The City may audit any such certification and may request in writing supporting documentation from the Developer. The Developer shall provide such documentation within fifteen (15) days of receipt of the notice. If it is determined by the City based upon such an audit that the conservation requirements of Section 5.3.1 have not been met for one or more buildings, the City shall notify the Developer and the applicant submitting the building plan(s) in writing of the specific matters which are not in compliance (the "Noncompliance Notice").

7.1.2. The Developer shall have thirty (30) days from the date of the Non-Compliance Notice, unless the time is extended in writing by the City, to either cure the non-compliance or to submit a plan to correct the noncompliance (the "Cure Statement"), which is acceptable to the City. The City shall have fifteen (15) days from receipt of the Cure

Statement to either accept or reject the Cure Statement as submitted or to request further information or actions. The parties may thereafter continue to seek a mutual resolution of the problem.

- 7.1.3. If the City rejects the cure as proposed by the Developer pursuant to Section 7.1.2, the Developer may submit to the City a supplemental plan for curing the non-compliance (the "Supplemental Compliance Plan"). If a Supplemental Compliance Plan is submitted, no further action shall be taken regarding the non-compliance for at least forty-five (45) days. By submitting the Supplemental Compliance Plan, the Developer agrees that all requests for permits which contain a substantially similar non-compliance problem will be put on hold pending final resolution of the issue.
- 7.1.4. If the City and the Developer are unable to resolve differences regarding the Noncompliance Notice and the Cure Statement within sixty (60) days of the date of the Noncompliance Notice, or differences regarding the Supplemental Compliance Plan within forty-five (45) days of the submittal of the Plan, the matter may be submitted by the City or by the Developer to the City Manager for final resolution as provided in Section 6 of the Revised Development Agreement.
- 7.1.5. A City audit of a plan shall not delay the processing or approval of the plan.
- 7.1.6. Upon issuance of the Noncompliance Notice, the City may delay issuance of permits for the plan subject to the notice and all other plans which contain the same potential noncompliance problem until the question of compliance with the requirements of Section 5.3.1 is resolved. The City shall include notice that issuance of permits will be delayed in the Noncompliance Notice.
- 7.1.7. If the parties agree that a plan is not in compliance pursuant to Sections 7.1.1 and 7.1.2 or the City Manager determines that the plan is not in compliance pursuant to Section 7.1.3, the City may deny the issuance of permits to the proposed structure and any other structures which would not be in compliance for the same reason. In determining whether to deny the issuance of permits the City shall consider the materiality of the noncompliance, the Developer's ability to correct the problem with respect to future buildings, the number of building which would not be in compliance if permits were issued, the cost of curing the noncompliance in the proposed plan and the financial cost to the builder or developer which would result from any denial of permits.

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- 7.1.8. If the City determines that the certification pursuant to Section 7.1 has resulted in a material noncompliance with the requirements of Section 5.3.1, the City may require that future review and approval of compliance with one or more of the requirements in Section 5.3.1 shall be determined by the City Development Services Department rather than by the Developer.
- 7.2. During the initial development of a Phase or Neighborhood of Civano, and thereafter during the development of Civano until changed by mutual agreement of the parties, the City Development Services Department shall, pursuant to its standard procedures including the availability of independent third party review as provided in the 1994 Uniform Administrative Code, Section 103, where appropriate, determine compliance with all Specific Requirements set forth in Sections 5.2 and 5.3 other than the requirements of Section 5.3.1, subject to review by the Interpretive Review Committee and appeal to the City Manager as provided in Section 5.4 of this Revised MOU and Section 6 of the Revised Development Agreement.
- 7.3. The parties recognize that the goal of Civano is to integrate energy and resource conservation principles, standards and technologies into the standard practices and procedures of the City. Thus the parties anticipate that as experience is gained over time with the implementation of the Revised IMPACT System, the parties will be able to develop less burdensome compliance review procedures without any reduction in the progress toward achieving the Performance Targets.

## 8.0 AMENDMENT

The parties may periodically review this Revised MOU to ensure that it continues to promote the energy and resource conservation and sustainable development goals of Civano and may amend this Revised MOU by mutual agreement or as set forth herein to achieve the Performance Targets and Specific Requirements of the Revised IMPACT System Standards and to meet changing circumstances as Civano development proceeds.

If, on the basis of the Monitoring Reports, the analysis and recommendations of the Civano IMPACT Committee, or independent information which has been reviewed by the Civano IMPACT Committee, either party determines that development is not progressing toward full compliance with the Revised IMPACT System Standards in a satisfactory manner, it may notify the other party in writing of its intent to amend this Revised MOU and/or the Revised IMPACT System. The City shall provide a copy of the notice to the Arizona State Department of Commerce, Energy Office. The parties shall then negotiate in good faith to establish appropriate amendments to ensure compliance with the goals and requirements of the Revised IMPACT System. Any amendment shall consider the economic impact of the proposed requirement upon the development of Civano and the investment of public funds and grants in this development. If the parties are unable to mutually agree upon amendments within

sixty (60) days, they shall discuss any issues with the City Manager, and the City Manager may, as provided in Section 6 of the Revised Development Agreement, resolve such issues and impose amendments which he deems reasonably necessary to achieve the goals of the Revised IMPACT System.

Any amendment to this Revised MOU shall not apply to any application for development approval, including PADs and rezonings, subdivision plats, development plans and building permits, that has already been submitted for review to the City prior to the notice of the intent to amend this Revised MOU, unless such development approval expires pursuant to existing code provisions. The parties shall provide notice of any amendment to the Arizona Department of Commerce, Energy Office. Any such amendment shall be in writing. Amendments to the Revised IMPACT System Standards shall be approved by the Mayor and Council.

Any application by Civano for a change of the Master Plan, the Rezoning Conditions or the conditions of any PAD which are adopted by the Mayor and Council subsequent to the signing of this Revised MOU shall supercede any requirement herein.

**9.0 REMEDIES**

The Monitoring Report, Periodic Evaluation and Specific Procedures for Implementation set forth in Sections 3.2, 3.3 and 5 above shall be the only portion of the Revised MOU which shall be subject to the remedies provided in Section 8.8 of the Revised Development Agreement. In addition to these remedies, the City shall not be required to issue any building permit which does not conform to City codes, existing and future specific plans and zoning and the requirements which are included in Section 5, Specific Procedures for Implementation, as set forth herein or as amended or revised pursuant to Section 8.0.

**10.0 NON-WAIVER OF COMPLIANCE**

Except as may be expressly agreed in writing, any decision by the City approving further development without complete compliance with all requirements and targets shall not constitute a waiver of any future application of requirements or Performance Targets as set forth in this Revised MOU or in the Revised IMPACT System Standards.

Signed this 8<sup>th</sup> day of December, 2003.

THE COMMUNITY OF CIVANO, LLC

CITY OF TUCSON

By: Judith L. Kilroy  
Judith L. Kilroy  
Its Authorized Representative

By: James R. Keene  
James R. Keene  
City Manager

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PULTE HOME CORPORATION, a  
Michigan corporation,

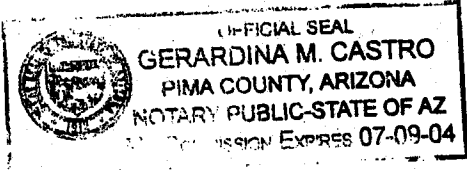
By: [Signature]  
Its: Attorney-in-fact  
Date: December 8, 2003

STATE OF ARIZONA        )  
                                  ) ss.  
County of Pima            )

The foregoing instrument was acknowledged before me this 8<sup>th</sup> day of  
December, 2003, by Bruce Stokes, the  
authorized representative of Pulte Home Corporation, a Michigan corporation.

[Signature: Gerardina M. Castro]  
Notary Public

My Commission Expires:  
7-9-04



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**CITY OF TUCSON GUIDELINES FOR DEVELOPERS AND BUILDERS**

**THE REVISED IMPACT System**

**(Integrated Method of Performance and Cost Tracking)**

**December 8, 2003**

12-21-03 10:10:10 AM

## CITY OF TUCSON GUIDELINES FOR DEVELOPERS AND BUILDERS

### THE REVISED IMPACT SYSTEM

(Integrated Method of Performance and Cost Tracking)

The IMPACT System (as revised herein and subsequently referred to as the "Revised IMPACT System") establishes a process and standards for organizing resource efficiency goals and stakeholder cooperation for sustainable community development and for measuring progress toward those goals over time. The original IMPACT System was adopted by the Mayor and Council of the City of Tucson (the "City") on October 2, 1995. It was intended to create a cyclical process that:

- \* Is grounded on metropolitan Tucson baseline conditions that are normally documented and periodically updated by community organizations.
- \* Is responsive to community policy priorities that will change over time.
- \* Uses performance targets and specific requirements that exceed baseline conditions without detrimental cost penalties.
- \* Uses collaboration among stakeholders to reach common goals.
- \* Measures development performance and costs to evaluate target achievement.
- \* Enables revisions as baseline conditions improve, and as new targets become technically and economically feasible.

Since the adoption of the original IMPACT System Standards, the development of Civano began with construction of dwellings and the Neighborhood Center in Neighborhood 1 and certain commercial properties. Development of Civano has been under the overall guidance of the Master Developer which has included several entities. While all Developers under the Development Agreement and all developers of Civano remain subject to the Revised IMPACT System Standards and the Revised Memorandum of Understanding, it is necessary to have a single entity that is responsible for coordinating compliance with requirements and the periodic monitoring and reporting functions. The Master Developer fulfills this roll.

Responsibility for administering the Revised IMPACT System, particularly those that may be implemented as construction requirements, will lie principally with the Developers of Civano during the construction and build out of the project. Achievement of the long range goals however will rest primarily with the residents as implemented by the Civano Community Association ("CCA"). The CCA is the non-profit corporation created pursuant to the Amended Covenants, Conditions and Restrictions for Civano: The Tucson Solar Village, recorded November 21, 1998, at Docket 10915, Page 639 of the Pima County Records (the "Civano CC&Rs"), for the purpose of administering the CC&Rs, as described in the Civano Master Plan, adopted by ASLD on March 5, 1992, as amended by City Ordinance No. 8971, dated October

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*Civano Revised IMPACT System for Sustainable Development*

20, 1997 (the "Master Plan"). The CCA membership will include all owners of property within Civano.

A key component of the original IMPACT System was a Memorandum of Understanding ("MOU") addressing implementation and monitoring that was executed on June 26, 1998, pursuant to the Civano Development Agreement adopted on July 1, 1996. A Revised Civano Development Agreement and Revised MOU (the "Revised MOU") were subsequently prepared, the primary signatories of which will be The Community of Civano, LLC, an Arizona limited liability company, Case Enterprises Inc., a Connecticut corporation, and Pulte Home Corporation, a Michigan corporation (the "Developers") and the City. The definitions in the Revised Civano Development Agreement shall apply herein. Entities or organizations that may assist in the implementation of the Revised IMPACT System include:

- \* Arizona Department of Commerce Energy Office
- \* Pima County Wastewater Management Department
- \* Tucson Electric Power Company ("TEP")
- \* Southwest Gas Corporation ("SWG")
- \* Pima Association of Governments ("PAG") Transportation Planning Division.

The Revised MOU provides for annual or biannual review of goals and accomplishment, to ensure that both the standards and the review process remain current and feasible. The stated policy of the City is that Civano maintain high standards for resource efficiency, and serve as a model for other developments in the United States and worldwide.

The Revised IMPACT System and the Revised MOU clarify and implement the "1991 Rezoning Conditions" established by City Zoning Ordinance 7697, adopted October 7, 1991, (as subsequently amended) and will guide the City's review of subdivision and development plans and initial building permit applications. These guidelines have been developed through participation of the organizations listed above, along with many other interested parties.

The City is committed to achieving the original performance targets over time and does not intend to accept lower performance levels in the initial Memoranda of Understanding. Subsequent amendments to the original MOU and IMPACT System (including this Revised IMPACT System) will reflect the performance targets and goals that are shown by experience to be technically and economically feasible.

One of the results of the initial development of Neighborhood 1 in Civano is the City's adoption of the Sustainable Energy Standard. This standard has been developed from the Civano Model Energy Code (as defined herein) which has been implemented to achieve compliance with the IMPACT System Standards in Neighborhood 1. The Sustainable Energy Standard provides a higher standard for energy conservation for all development in Tucson and is applied to all City projects. The Civano Model Energy Code and Sustainable Energy Standard, as adopted and as amended in the future, will continue to be implemented as a baseline for development in Civano. Where there is a conflict between these two standards, the standard that provides the greater energy conservation shall apply.

The monitoring of performance and updating of baseline data and performance requirements is important to the future build out of the remaining portions of Civano. The Master Developer shall be responsible for collecting, preparing and disseminating monitoring reports and updating data during the construction phase of Civano. All developers of Civano are required to cooperate with the Master Developer by providing the information and documentation necessary to complete timely monitoring reports. Periodic monitoring reports shall be prepared through the completion of 75% of the residential properties, and a final report shall be prepared upon the completion of 95% of the residential property. Subsequent monitoring shall be conducted by the CCA in its discretion.

In conclusion, the Revised IMPACT System balances the risks of advanced building methods with the rewards of market support for cooperating designers and builders. The City will provide broad and continuing assistance to the Developer and builders who make Civano a successful model of sustainable development. The following sections summarize performance standards for each resource area. The City will continue to develop information and resource materials to describe these standards in greater detail. The City will implement these standards on a performance basis, so that any reasonable means of achieving the minimum threshold will generally be acceptable. This will foster innovation, variety, and competition among those involved in this dynamic undertaking.

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**Goal**

Reduce building energy demand significantly beneath metropolitan Tucson baseline levels with passive and active solar thermal use, and efficient design and construction techniques and equipment. The original Civano target called for 75% savings of all types of energy use.

The Civano Advisory Committee has determined that is not feasible for City agencies, developers, and builders to affect individual consumption of energy through equipment like lamps, computers, and other household appliances. Therefore, the goals described below have been reformulated to address energy use through the building shell, and heating and cooling systems only. These create the largest energy demands in a building, and are the least susceptible to correction after construction; they can also be evaluated in advance through the building permit process. The initial standards will thus reduce residential energy demand by 65% and commercial energy demand by 55%, through improvements to the shell, heating and cooling systems. Individual energy conservation will be promoted throughout Civano, but is not included in these calculations.

**Metropolitan Baseline**

Analysis of 1990 baseline conditions (when the Civano performance targets were established) reveals that single-family residential use was approximately 64,000 BTUs per square foot per year. A Civano Model Energy Code (the "Model Energy Code") was prepared in 1990 and revised in 1995 to provide developers and builders with energy demand standards in shell, heating and cooling systems that will reduce residential consumption to 20,000 BTUs per square foot per year. Figures for commercial use vary widely, and are thus not listed here. However, commercial energy demand will be reduced by 55% through the 1990 Model Energy Code.

**Performance Targets and Specific Requirements**

Based on computer modeling of potential efficiency measures, the following maximum total "energy budgets" are proposed for the indicated Civano building types. The Model Energy Code describes methods of reducing energy demand by the following percentages:

	Reduction	
	1990	1995
Single-family residential	65%	50%
Multi-family residential	65%	50%
Commercial	55%	--

These performance targets have been expressed as "energy budgets" to give builders maximum flexibility in using different approaches to reach the targets. The attached Table A shows how one method, Prescriptive Standards, will achieve that goal. Builders can also use computer models or analysis of building components to effect the same level of savings.

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Additionally, there are several specific requirements for all Civano development:

All structures shall be designed and constructed to comply with the Civano Model Energy Code/Sustainable Energy Standard as adopted and as it may be amended.

All structures shall be designed and constructed so that there is minimal obstruction of solar light for adjacent properties at the level of a roof of a single story building constructed at the established set back.

All structures must incorporate some beneficial solar application. While solar devices are encouraged, passive solar design which is demonstrated to reduce energy demand will also meet this requirement.

Landscape and hardscape coloration and/or vegetation is to be used to reduce microclimate temperatures adjacent to buildings. The average reflectivity of all major exterior surfaces must be 0.5 or greater on the albedo scale.

### Implementation Responsibilities

The Implementation MOU will provide for the following roles:

*Developers/builders.* Layout of streets and lots, and design and construction of exterior spaces and buildings, to achieve the performance targets and specific requirements. Energy analyses will have to be prepared with development and building plans to document predicted target compliance. These analyses can be hand calculated or prepared with computer models, such as those used in the Arizona Home Energy Rating System, or comparable software.

*Civano Community Association Design Review Committee ("DRC").* Review and approval of building plans and energy analyses. The CCA DRC will want to specify the form in which it receives energy analyses, and the specific calculation procedures and computer models it considers appropriate for use. The CCA DRC will also promote energy conservation in the use of household appliances and other consumer equipment, to create an ethic of resource conservation in personal behavior.

*City Development Services Department.* Review and approval of development and building plans (per the 1991 Rezoning Conditions and the Civano Model Energy Code/Sustainable Energy Standard).

*TEP and SWG.* Provision of technical guidance to developers/builders. Both utilities are considering the type and extent of guidance that may be offered in the future.

### Monitoring

The Monitoring MOU will provide for the following:

*Baseline Updating.* Updating responsibility legally lies with the City Development Services Department through future amendments to the building code and the Civano


Model Energy Code/Sustainable Energy Standard. Conversion of code and standard construction practice to an updated baseline in the future will be done in coordination with the CCA DRC and the University of Arizona.

*Civano Performance.* TEP and SWG analyses of building energy use and costs; University of Arizona detailed monitoring of specific buildings; and database maintenance by the Master Developer.

TABLE A

**Comparison of Selected Prescriptive Code Specifications**

Data for MEC92, aZhers, and Good Cents supplied by Tucson Electric Power Company

COMPONENT	MEC'92	AzHERS	TEP Good Cents	 CIVANO
Ceiling insulation	R-25	R-30	R-30	R-38
Sidewall insulation	R-11	R-19	R-19	R-19
Slab perimeter insulation	None	R-5, 2' deep	None	R-5, to bottom of footing, or 1' below grade
Glazing area limit; U-value		15%, U-0.58	15%, U-0.64	Sliding scale: no limit on area, but larger areas require lower U-values. For example, if glazing = 15% of floor area U ≤ 0.52
Exterior doors		U-0.5	U-0.385	U-0.6 (but varies by type)
Heating system efficiency	80%	78% AFUE	80% AFUE	Building must be oriented for optimum solar contribution; remainder supplied at 80% efficiency. Woodstoves and fireplaces must meet EPA pollution standards.
Cooling systems – split - single package	9.4 EER 9.5 EER	10.0 SEER 9.7 SEER	12.0 SEER 12.0 SEER	12.0 SEER 12.0 SEER Refrigerative systems only in combination with evaporative. Sizing limits specified. Alternative technologies must achieve efficiency equal to conventional technology based on energy use per square foot of conditioned space.
Exterior duct insulation	R-6.2	R-5	R-5, ducts must be sealed	R-6.5, ducts must be sealed
Water heating – gas fired		0.55 EF	0.56 EF	Mandatory solar water heating component for primary source of heat. Conventional technology backup permitted. R-10 minimum insulation for tank. Swimming pools solar heated only.
- electric		0.89 EF	0.90 EF	
- heat pump		2.88 EF	2.88 EF	

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**Goal**

Use on-site solar photovoltaic (PV) and/or solar thermal power generation, and comparable natural gas innovations to provide needed electric and thermal supplies.

**Metropolitan Baseline**

At the time of the original IMPACT System, there were no grid-connected solar power installations currently operating in the Tucson area or advanced natural gas technology installations such as fuel cells. There were, however, about 50 non-grid connected solar PV units (approximately 100-500 watts each) installed on individual homes and infrastructure throughout Tucson.

As of 2001, Tucson Electric Power ("TEP") estimates that there may be between 10 and 30 grid-connected solar power installations in the Tucson area. TEP has no statistics for the current number of non-grid connected units.

**Performance Targets**

Because of the high costs projected by TEP for solar PV to the year 2000, initial PV use in Civano will likely be limited to a small demonstration installation. A timetable for phasing-in wider use of PVs as economics improve over time will be established between TEP and CCA within the terms of the Revised MOU and consistent with TEP's state-approved "Integrated Resource Plan." Solar thermal power facilities will be treated in the same manner.

In addition to solar electricity, consideration will be given to demonstrating advanced natural gas technologies such as fuel cells, which can produce both electricity and thermal energy. Consideration will also be given to district heating and cooling ("DHC") of the Village's high-density core areas. DHC can be produced with solar energy, natural gas and/or electricity, and can be significantly more efficient than individual single-building heating/cooling systems.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developers/builders.* Land set aside, design and construction of buildings that are compatible with supply technologies being offered in Civano. In particular, roofs must be constructed to accommodate solar equipment.

*CCA DRC.* Review and approval of development and building plans to ensure compatibility with energy supply technologies.

*City.* Cooperation with technology demonstration projects, e.g., solar PV powering of on-site municipal streetlights or pumps.

*TEP and SWG.* Construction and operation of technology demonstrations, and specifically for TEP, a long-range goal to install grid-connected PV and/or comparable renewable technologies when determined to be cost-effective under its "Integrated

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Resource Plan” (an exception would be grant funding that could reduce PV costs in advance of market economics). TEP, SWG and/or another party should also consider operation of a DHC system in Civano’s core area.

**Monitoring**

The Monitoring MOU will provide for the following:

*Baseline Updating.* Responsibility for updating the baseline will lie with the City’s Development Services Department in consultation with the Master Developer, TEP and SWG.

*Civano Performance.* TEP and SWG documentation of supply technology performance and costs, possibly with University of Arizona monitoring assistance. The Master Developer will be responsible for database maintenance.

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**Goal**

Reduce potable water consumption significantly below metropolitan Tucson baseline levels; and use non-potable water, such as reclaimed water, graywater, or rainwater harvesting for landscape irrigation.

**Metropolitan Baseline**

In 1991, the average annual residential potable water use in metropolitan Tucson was approximately 114 gallons per person per day. Of that amount, the average interior potable water use was approximately 80 gallons per person per day, and the balance was consumed by exterior uses such as landscape irrigation and evaporative cooling. During summer months, the exterior landscape water usage generally equals or exceeds interior use. Nonresidential use was approximately 40 gallons per person per day.

In 2000 (based on a population of 623,017 for metropolitan Tucson), the average annual residential potable water use was approximately 113 gallons per person per day. Of that amount, the average interior potable water use was 68 gallons per person per day. Nonresidential use was estimated at 36 gallons per person per day.

**Performance Targets and Specific Requirements**

The following performance targets will apply to Civano development:

Residential potable water interior use of 53 gallons per person per day, and a nonresidential potable water interior use of 15 gallons per employee per day (subject to case-by-case review of businesses with above average water requirements, e.g., restaurants). See attached Table B for water use by fixture, including coolers. This results in a 54% reduction of residential interior potable water use, and a substantial reduction for commercial use of potable water. (Exact commercial reductions cannot be estimated due to lack of current data on commercial usage by employees.)

Water budgets will be established for each household, according to Arizona Department of Water Resources guidelines for a maximum of 28 gallons of water per person per day for exterior uses. Private swimming pools will be discouraged, but if installed shall be required to have pool covers installed and may be heated only by solar devices.

The following specific requirements will also apply to Civano development:

Site clearance for residential lots will be limited in order to preserve desert vegetation and maximize natural drainage. A significant portion of each building site must remain as existing natural desert vegetation, with any significant plant species specifically protected. The exact requirement will be negotiated after drainage and other engineering studies have been completed.

City xeriscape landscape standards set forth in LUC Section 3.7.2 shall apply to all new development, including all single-family residences and duplexes, and to all yards and landscapable areas.



All landscape irrigation will be accomplished with non-potable water, including reclaimed water, graywater systems, water harvesting systems or other alternative irrigation systems not dependent on potable water. The City's reclaimed water service or rainwater harvesting/graywater equipment or other alternative irrigation strategies not dependent on potable water will be provided at all Civano properties.

All nonresidential space conditioning system cooling towers rated at one hundred tons or more of cooling capacity will comply with State water conservation standards.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developers.* Construction of community pools early in each phase of development, to discourage construction of private pools. Compliance with site clearance standards described under Specific Requirements.

Reclaimed water will be utilized in common areas and for nonresidential uses. Residential uses will utilize reclaimed water, rainwater harvesting systems or graywater systems or other alternative irrigation system not dependent on potable water, as permitted by applicable state and City regulations. Plans shall identify the non-potable water source for irrigation.

*Builders.* Design and construction of buildings in compliance with the performance targets and specific requirements.

*DRC.* Review and approval of developer/builder plans.

*City Development Services Department.* Review and approval of building plans (per Ordinance 7697 special conditions). Landscape and grading plan reviews will also be coordinated at this stage.

*City Water Department.* Continued implementation of water conservation programs, and use of Civano to demonstrate advanced conservation techniques.

**Monitoring**

The Monitoring MOU will provide for the following:

*Baseline Updating.* Responsibility for updating the baseline will lie with the City Water Department.

*Civano Performance.* City Water Department analysis of Civano water consumption; University of Arizona detailed monitoring of specific buildings; and CCA database maintenance.

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TABLE B

## Interior Residential Water Use Model

		Gallons Per Capita Per Day (GPCPD)
Toilets	5 Flushes X 1.6 gal/flush	8.0
Shower/Bath	7 min/shower X 2.5 gpm X 0.86 showers pcpd	15.0
	25 gal/bath X 0.14 baths pcpd	3.5
Faucets	Kitchen 3.0 gpcpd + Bathroom 2.4 gpcpd	5.4
Dishwasher	12 gal/load X 0.2 loads pcpd	2.4
Clothes Washer	42 gal/load X 0.3 loads pcpd	12.6
Garbage Disposal	None: Composting encouraged	0
Evaporative Cooler	6,000 gal/house/year / 365 days / 2.8 persons	<u>5.9</u>
<b>TOTAL POTABLE WATER USE PER PERSON PER DAY</b>		<b>52.8</b>

Source: Arizona Department of Water Resources

**Goal**

Reduce landfill-destined solid waste beneath metropolitan Tucson baseline levels, establish an on-site recycling/composting center, recycle construction waste, and use recycled construction materials.

**Metropolitan Baseline**

In 1993, solid waste was generated by Tucson area residences at the rate of approximately 3.1 pounds per day per person, and by commercial uses at the rate of about 6.5 pounds per day per employee. Of these gross generation rates, approximately 0.2 pounds per day per resident and 0.9 pounds per day per employee were recycled. This equates to recycling rates of 6% of residential wastes and 14.6% of nonresidential wastes.

As of 2001, Tucson area residences generated solid waste of approximately 2.93 pounds per day per person, of which approximately 0.26 pounds per day per resident or 9% of residential waste is recycled. The City estimates that 3% of nonresidential waste is recycled.

In 2002, the City introduced curbside recycling for residential dwellings and a commercial recycling service that have substantially increased recycling and resource conservation. These programs which operate on a citywide basis have superceded some of the original goals for creation of recycling programs within Civano.

**Performance Targets**

At the outset of development, a recycling target of 30% of wastes will apply to residences and businesses, increasing to 60% by the date at which 1,250 residential units have been constructed. The developer will coordinate recycling programs with the City's Solid Waste Management Department and work with the CCA to establish the on-site recycling/composting center. Consideration should also be given to development of composting demonstration programs, either on a community-wide basis or for individual residences.

The use of recycled materials in building construction should also be promoted in the Civano development, as should a demonstration of recycling building waste materials from the construction process.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developer/Builders.* Design and construction of buildings with built-in recyclables separation features (and hazardous materials storage), and curbside recyclables storage/pick-up areas. Some recycled construction materials shall be used in each structure, and programs shall be established for construction waste to be recycled, to the greatest extent feasible.

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*CCA DRC.* Review and approval of developer/builder plans. Develop, construct, and operate the on-site recycling/composting center, in cooperation with the City.

*City Solid Waste Management Department.* Provision of curbside pick-up to all uses, including single family, multifamily and commercial, where appropriate; designation of the proposed Civano recycling center as a "Neighborhood Drop-Off Center" within the City's overall program; and use of Civano as a pilot site for demonstrating new programs and advanced recycling and composting techniques.

**Monitoring**

The Monitoring MOU will provide for:

*Baseline Updating.* The recycling baseline will be updated by the City Solid Waste Management Department.

*Civano Performance.* Cooperative compilation and analysis of Civano solid waste collection records by the Solid Waste Management Department, University of Arizona Garbage Project, and Master Developer.

**Goal**

Improve air quality by reducing auto dependence through: 1) internal Civano circulation via walking, biking, electric cart and other alternative energy-saving transportation methods; and 2) by reducing external vehicle miles traveled (VMT) below metropolitan Tucson baseline levels.

**Metropolitan Baseline**

Metropolitan Tucson 1993 baseline transportation demands are summarized in the following Table C.

**Specific Requirements**

Significant reductions in auto dependence will be problematic at the outset of Civano development because of the project's distance from major employment and activity centers; and the likelihood that proximate commercial services will be very limited at start-up. Moreover, SunTran's transit plan through 2003 does not contain a bus route serving Civano. Therefore, instead of establishing auto mode shift or VMT reduction targets it is recommended that the following specific requirements be set:

Inclusion of commercial services within walking/bicycling distance of Neighborhood One homes.

Extension of one or more bus routes to Civano as soon as practical.

Ensure that a pedestrian and bicycle-friendly built environment will be essential at the outset of development. Therefore, each development phase will provide for a majority of through streets (versus cul-de-sacs); and construction of a system of sidewalks or bike or multi-purpose paths; and nonresidential uses will have orientation and access emphasis on pedestrian /bicycle linkages rather than auto linkages.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developers.* Develop land-use mix and density, and internal circulation system, to minimize internal auto travel. The Neighborhood One developer(s) will have to include a nonresidential component; and all developers, regardless of phase, will have to construct a pedestrian/bicycle circulation system.

*Builders.* Design and construct buildings and sites with emphasis on pedestrian, bicycle, and transit access; also provide electric cart charging facilities.

*CCA DRC.* Review and approve developer/builder plans.

*SunTran.* One or more bus routes (preferably express lines) should be extended to the Village as soon as practical. Also, consideration should be given to siting the proposed

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Eastside Transit Center at or adjacent to Civano in coordination with the following land-use recommendation.

*City Planning and State Lands Departments.* Consideration will be given to land-use designations that create a pattern of high-density, mixed-uses in the area of Houghton Road and the Drexel Road alignment, with the existing access to Neighborhood 1. Achievement of Civano's transportation demand goal will be substantially strengthened if the general vicinity becomes a larger node of concentrated urban activities. This is already occurring to a certain extent with development of the nearby Rita Ranch project and the University of Arizona's Science and Technology Park and associated development.

**Monitoring**

The Monitoring MOU will provide for:

*Baseline Updating.* City of Tucson Transportation Planning Division responsibility for baseline updating.

*Civano Performance.* City of Tucson Transportation Planning Division and University of Arizona analyses of Civano travel demand, with CCA database maintenance.

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**Table C**  
**METROPOLITAN TUCSON TRAVEL DEMAND CHARACTERISTICS**  
 (1993 PAG Transportation. Planning Division)  
 Daily VMT Per Capital  
 18 miles (all trip types)  
 Autos Per Dwelling Unit

Owner-occupied	1.8	Renter-occupied	1.2
<b>Trip Purpose</b>			
	<b>% of Weekday Trips</b>	<b>% of Saturday Trips</b>	
<b>Trip Purpose</b>			
Home	36	37	
Work	13	4	
School	6	<1	
Shopping	11	20	
Medical	2	1	
Social/Recreational	12	23	
Other Personal Business	7	7	
Work Related	3	1	
Pick Up/Drop Off Passenger	8	5	
Change Mode of Travel	2	2	
Other	<1	<1	
	100	100	
<b>Trip Mode</b>			
<b>Mode</b>	<b>% Weekday Trips</b>	<b>% Saturday Trips</b>	
Driver	64	58	
Passenger (includes carpool and vanpool)	21	33	
SunTran	2	<1	
School Bus	2	<1	
Bicycle	2	<1	
Walk/Jog	8	2	
Taxi/Soc.Svc/Special Bus	<1	7	
Other	<1	<1	
	100	100	

Percentages may add up to more than 100% due to rounding.

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**Goal**

Create one job within Civano for every two dwelling units.

**Metropolitan Baseline**

The City Planning Department indicates that very few development projects in metropolitan Tucson have had a mix of housing and employment located on the same site. Rita Ranch is an example of the very limited type of mixed-use development to date in the community.

**Specific Requirement**

A minimum ratio of 300 sq. ft. of nonresidential floor area (equivalent to work space for a typical office employee) will be constructed for every two dwelling units built. This ratio may be achieved through the total planned development of Civano in the Civano Master Plan and as it may be amended. Credits will be allowed for homes constructed with built-in dedicated office space. This requirement is also consistent with the transportation objective of planning for commercial and other employment uses at the outset of Civano development.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developers/builders.* Planning, development and/or construction of residential and nonresidential uses in ratios that achieve the specific requirement. Design of telecommunications capacity to enable expansion of fiber optics or similar infrastructure to all commercial and home office locations. Initially, this may consist of placing conduit to allow expansion of telecommunications capabilities as the population at Civano grows and demands such services.

*CCA DRC.* Review and approval of developer/builder plans.

*City Office of Economic Development and Greater Tucson Economic Council.* Commitment to actively recruit employers for location in Civano.

*City Planning and State Land Departments.* Consideration of land-use designations that increase employment opportunities and services in the vicinity of Civano. Goal achievement will be strengthened to the extent that the general vicinity becomes recognized as an employment center. As noted earlier, this trend is already underway at Rita Ranch and the University of Arizona Science and Technology Park.

**Monitoring**

The Monitoring MOU will provide for:

*Baseline Updating.* Responsibility for baseline updating will lie with the City Planning Department.

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*Civano Performance.* CCA surveying of Civano employment versus dwellings built.



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**Goal**

The average wage of Civano jobs should enable employees to afford the average cost of Civano housing.

**Metropolitan Baseline**

According to the Tucson Chamber of Commerce, in 1993 the average price of a new home in metropolitan Tucson was \$109,000, and the average rent for a new apartment was approximately \$550 per month.

According to statistics compiled by the City's Comprehensive Planning Task Force, the average sales price for a single family home (both new and resale) as of May 2003 was \$193,561. The estimated monthly rental for a two-bedroom apartment for 2004 is \$707.

**Performance Target**

The Civano Master Plan cites a range of single-family dwelling prices of \$99,000-134,000; and apartment rental rates of \$400-670 (these are 1989 estimates escalated to 1994 dollars). When compared to the baselines, the Civano price range implies apartment affordability, but suggests difficulty in home affordability for lower wage groups, e.g., retail/service employees.

A widely-used market share goal for low and moderate-income housing is 20% of the dwellings in new projects. Therefore, the CCA DRC will ensure that at least 20% of the eventual total number of all dwellings are priced for low and moderate-income households (defined by HUD as 80% or less of the local median household income); and that the affordable housing include all dwelling types built in Civano. This goal will be reviewed periodically, but the exact percentage is anticipated to vary year-by-year. It is reasonable to expect approximate conformance with the goal at the stages when 25%, 50%, and 75% of all residential units have been built and occupied, to ensure that the goal is achieved at 100% completion. However, developers and builders will be afforded some flexibility within those intervals.

**Implementation Responsibilities**

The Implementation MOU will provide for the following roles:

*Developers/builders.* Design, construction and marketing of residences in accordance with the affordability target to the extent that assistance is available from public agencies, foundations, and other sources to finance and construct affordable housing.

*CCA DRC.* Review and approval of developer/builder plans.

*City Community Services Department.* Assistance to developers/builders that may participate in low and moderate-income housing programs. Other non-municipal organizations can also assist developers/builders with these programs, such as Chicanos Por La Causa, Habitat for Humanity, and the Tucson Urban League.

**Monitoring**

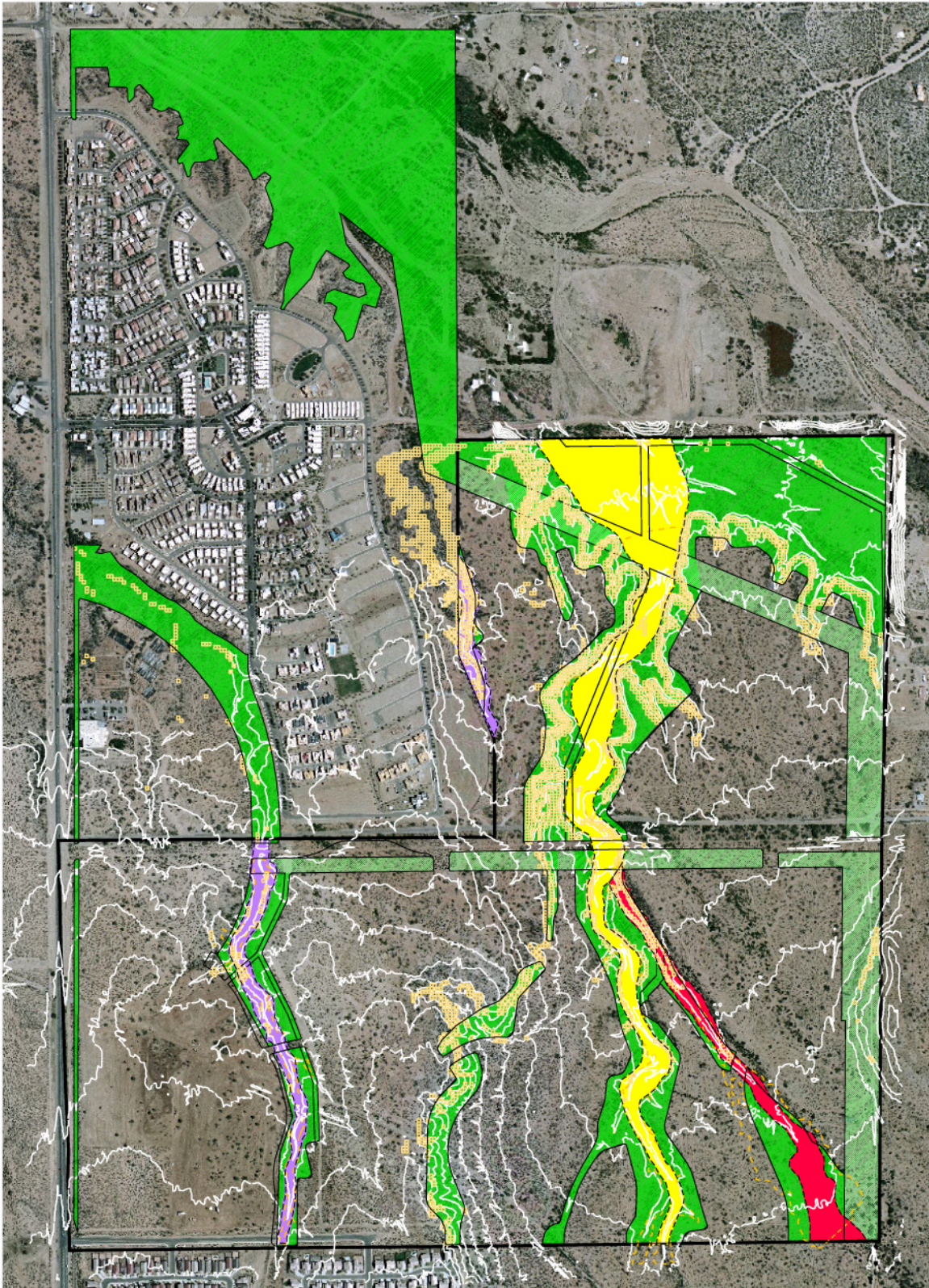
The Monitoring MOU will provide for:

*Baseline Updating.* Responsibility for baseline updating lies with the City's Community Services Department.

*Civano Performance.* CCA surveying of Civano employees who reside on site.

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# Appendix 3: Environmental Impact Report Exhibit



100, 150, and 160, portions of 1/2, 1/4, and Sec. 12, N 102  
 Pima County, Arizona  
 Aerial Date: 12/06/04 Local Quadrangle  
 Photo Source: Aerial Express 2004

NOTE: 100-YEAR FLOOD LIMITS, SLOPE DATA, AND ERZ AND WASH INFORMATION ARE SHOWN FOR SIERRA MORADO PORTIONS OF  
 PROPERTY ONLY. THIS DATA IS NOT DIGITALLY AVAILABLE FOR CIVANO NEIGHBORHOOD.

## LEGEND

- 100-YEAR FLOOD LIMITS
- SLOPE - >= 15%
- XERORIPARIAN VEGETATION LIMITS WITHIN PROPOSED ERZ ORDINANCE DESIGNATION
- XERORIPARIAN VEGETATION LIMITS WITHIN PROPOSED WASH ORDINANCE DESIGNATION
- XERORIPARIAN VEGETATION LIMITS WITHIN EXISTING WASH ORDINANCE DESIGNATION
- NATURAL OPEN SPACE
- OVERHEAD EASEMENT NATURAL OPEN SPACE

