Sustainability Task Force Agenda

A Committee of the Chico City Council
Mayor Ann Schwab, Chair

Meeting of August 3, 2009 – 3:00 p.m. to 5:00 p.m.

Council Chamber Building, 421 Main Street, Conference Room No. 1

1. PRESENTATION REGARDING A CHICO DOWNTOWN AREA HEAT IMPACT STUDY.

Landscape Architect Greg Melton will present a preliminary study that he prepared with help from a Pleasant Valley High School intern of the heat island effects generated from the roofs of buildings and hardscape areas in the downtown and other areas around Chico. The Task Force will also consider ideas regarding establishing a cool/green roof policy and program to reduce these effects.

2. CONSIDERATION OF PROPOSED REVISIONS TO THE CHICO MUNICIPAL CODE REGARDING RESIDENTIAL ENERGY CONSERVATION MEASURES REQUIRED UPON RESALE.

At its 7/6/09 meeting, the Task Force considered recommendations from the City's Building Official to amend the Chico Municipal Code to upgrade the energy conservation measures required to be installed upon the sale, exchange, or transfer of residential properties. The Task Force continued discussion of this item to today's meeting.

3. REPORTS AND COMMUNICATIONS

a. Update on Preparation of the Climate Action Plan - Staff will provide an update on the progress in developing a draft Climate Action Plan.

b. Update on Development of Sustainability Element/Indicators - Staff will update the Task Force on the development of the Sustainability Element and the Task Force will continue its review of the Indicators for the 2030 General Plan. A revised list of the indicators which were previously discussed by the Task Force is attached to this agenda.

4. BUSINESS FROM THE FLOOR

a. Members of the public may address the Committee at this time on any matter not already listed on the agenda, with comments being limited to three minutes. The Committee cannot take any action at this meeting on requests made under this section of the agenda.

5. ADJOURNMENT – The meeting will adjourn no later than 5:00 p.m.

ATTACHMENTS:

Heat Impact Study
Staff Report/Proposed Residential Energy Conservation Measures
Revised Sustainability Indicator List

Distribution available in the office of the City Clerk:

Prepared: 7/27/09
Posted : 7/27/09
Prior to: 5:00 p.m.

Chico City Clerk's Office
411 Main Street, Chico, CA 95928
(530) 896-7250

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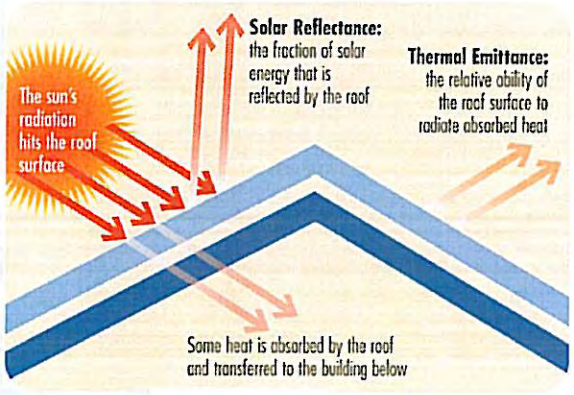
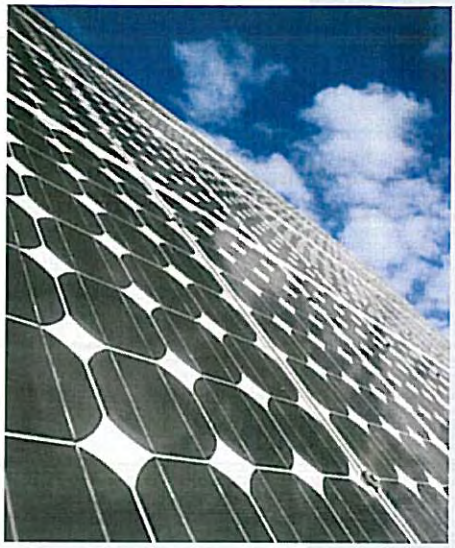
Members:

Jason Bougie	Lindsay Buckley	BT Chapman	Tom DiGiovanni	Tim Dobbs
Deanna Dottai	Chris Giampaoli	Ken Grossman	Jon Luvaas	Scott McNall
Jim Pushnik	Ann Schwab, Chair	Jim Stevens	Scott Wolf	Julian Zener

Chico Downtown Area

Roof and Roadway Heat Impact Study





Chico Roof Top Gardens

- A Sustainability Study; the essentials of a "Healthy City."

Abstract... Tangible

Imagine a city in which the concern is not of having as little negative impact on our environment but instead on how we can best impact it positively. A city in which storm water run-off is managed by vegetation, not men and pipes; roof tops and roadways reflect away much of the sun's heat; trees are placed to provide a wealth of shade throughout urban areas; where your building is powered by the overhang that shades its parking. Now stop imagining because these concepts are within reach – in many cases, they have already been accomplished. Through the application of the proposed improvements, not only can Chico become a truly healthy city, over time, we can save money as we grow.

This study was created with the intent of encouraging local green infrastructure. Through presenting businesses with data and examples of environmentally conscience projects and facilities, we wish to show the benefits and practicality of such endeavors. It is our hope that eventually the entire city will participate.

The thought of installing environmental improvements is often viewed as unnecessary, expensive, and a nuisance. It has been shown; however, that these projects and investments are important, cost beneficial, and gratifying. This study proposes possible improvements and benefits of retrofitting Chico's roof tops, roadways, and existing hardscape. If businesses are willing to challenge themselves to better the collective, we are confident we can make Chico a truly healthy city. The Downtown, California State University, Chico campus and the Chico Mall were our areas of focus.

Roof Tops

The management of roof tops is separated into Cool Roofing, Green Roofing, and solar array installation. A Cool Roof is a roof with a lighter color finish, which reflects more of the sun's light and absorbs less heat into the building. A Green Roof is a roof to which vegetation has been added which, among other natural benefits, acts as another layer of insulation. The installation of a solar array will convert the sun's rays into usable energy for the building. The addition of any of these three, or any combination of them, would be a great improvement.

Solar roof top installation benefits are modeled using information from local arrays. One installation covers 185,000 square feet of roof area, and is comprised of 7,600 185 W Mitsubishi panels. This array's total power output is 1.42 MW DC. The project received a thirty percent federal tax credit and much of the project was rewarded a rebate from PG&E, resulting in an installation cost of just over one million dollars. The panels are expected to pay back the cost of installation in approximately eight to nine years. A second local array is a 98.764 KWp system, which consists of 612 Sharp – 185 W solar modules and covers approximately 17,900 square feet of roof area. This project had an estimated cost of 901,912 dollars (including roofing retrofit), with 859,547 dollars in rebate eligible funds, and received a fifty percent PG&E rebate of 429,774 dollars. Each cell has a twenty – five year life expectancy. There are 1,285,646 square feet of roof top area defined in downtown, 1,166,103 square feet of roof top area defined in CSUC and 329,754 square feet of roof top area are defined to the Chico Mall alone, available for retrofit.

Cool Roofs are defined in the state of California and under Title 24 as having a reflectivity of 0.70 or greater and a thermal emittance of 0.75 or greater. Our proposal for Cool Roofing is guided by information provided by local businesses regarding their total air conditioned space (in square feet), annual heating and cooling cost, and material information. Figure 1 shows the existing roof conditions in the study's three regions and proposed scenarios of improvement. Ideally, and in the scenarios we present,

area is remove from the dark and grey, in this order, and added to the light. With this information, we would like to demonstrate the money saving power of Cool Roofs through cost comparisons. On one local 45,000 square foot roof, new lighter colored sprayed polyurethane foam was applied for (roughly) only 2.60 dollars per square foot and came with a ten year warranty. We found that, on average, buildings with lighter color roofs pay heating and cooling cost of roughly 1.73 dollars per square foot; grey roofs pay Y dollars and dark roofs Z dollars. This data will be offered to businesses to encourage updating to Cool Roofs.

For those roofs considered white, we will propose either a material change to an ideal cool roof, or the installation of a green roof. Green roofs are more expensive to install and maintain than cool roofing, but the benefits of green roofing are also more numerous. A Green Roof keeps a building cool when the weather is warm and keeps the building warm when it is cool. Green Roofs help reduce storm water run-off, consume carbon dioxide, produce oxygen, increase the roof life span, filter air and water pollutants, provides sound protection, increases wildlife habitat, and can be used to grow vegetables, fruits and flowers. Furthermore, green roofs add aesthetic appeal. Green roofs are an ideal for a healthy city and are proposed as such.

As a note, it should be stated that residential improvements were not incorporated into the study because it would seem ineffective to propose scenarios when residential retrofits happen on a more personal and specific level. Cool Roofs have proven less effective on steeply sloped roofs and green roofs struggle to stabilize on steep roofs – both complicating typical residential proposals. We do; however, recommend solar installation for residential improvements or, as a more modest investment, solar water heating – which only require two or three panels and can assume a large portion of a home's energy bill.

Figure 1					
	Roof Tops				
	Area (Sq. ft)				
		Total Existing:	Light Area	Grey Area	Dark Area
Down Town	1,285,646		247,800	902,585	135,261
California State University, Chico	1,166,103		132,768	802,723	255,090
Chico Mall	329,754		161,703	128,749	
Air Conditioned Area (Sq. Ft.)					
Annual Heating and Cooling Costs					
Scenarios	10%	Approx. # roofs			
Down Town	128,565	16	376,365	902,585	6,696
CSUC	116,610	6	249,378	802,723	138,480
Chico Mall	32,975	0.1	194,678	95,774	0
	25%				
Down Town	321,412	41	569,212	716,434	0
CSUC	291,526	14	424,294	766,287	0
Chico Mall	82,439	0.25	244,142	46,310	0
	50%				
Down Town	642,823	82	890,623	395,023	0
CSUC	583,052	28	715,820	474,761	0
Chico Mall	164,877	0.5	329,754	0	0

Existing Hardscape

Three possible improvements have been considered for existing hardscape: solar carports, increased tree shade, and Cool Pavements. Solar carports are shade structures built over parking lots which are adorned with solar cells used to capture the sun's energy. For existing hardscape which are sparsely covered, increased tree shade could lower pavement and ambient air temperatures, making the

area more habitable. Cool pavements are similar to cool roofs, in that a light colored material finishes the surface to reflect light and absorb less heat, also resulting in cooler pavement and ambient air temperatures. Figure 2 outlines the proposed scenarios of existing hardscape management – tree shade percentages was made by relative approximation and the scenario improvements were given to each category as a means to communicate the possibilities of updates.

Solar carport benefits are modeled using information obtained from a local array. The information was gathered from a carport positioned on roughly three acres (~130,680 square feet) of land, fitted with just fewer than 2,300 Mitsubishi 225 W panels. The cost of installation was just greater than one million dollars after to a thirty percent federal tax credit and PG&E rebates. The panels are estimated to payback the cost of installation in approximately seven to eight years. The array has a power capacity of 503 KWp. There are 1,282,203 square feet of existing hardscape in the defined Downtown area, 1,682,862 square feet of existing hardscape in the defined CSUC area, and 1,460,960 square feet of existing hardscape devoted completely to parking at the Chico Mall. These areas provide excellent opportunities for solar carport installation.

Increased tree shade benefits are rationalized through heat comparisons. Temperature and humidity were recorded on June X, 2009, in both shaded hardscape and unprotected hardscape. The temperature in the shaded area was X °F (Y °C) with a humidity of Z. Without tree shade, the temperature was recorded as X́°F (Ý °C) with a humidity of Ź. The lower ground and ambient temperature is not only more comfortable for inhabitants, lower temperature parking lot pavement is more resilient and lasts longer. Planting trees in barren existing hardscape would also contribute to the consumption of carbon dioxide and production of oxygen.

Cool pavement benefits are offered through heat comparisons. Cool pavement is finished with lighter colored, reflective materials. Some benefits of cool pavement are: cooler surface and ambient air temperature – in areas like downtown, this requires shops to use less air conditioning; increases air quality; increases pavement durability and lifespan and increases visibility without concern of glare for recommended reflectivities. Temperature and humidity were recorded on June X, 2009, on both shaded pavement and unprotected pavement. The temperature in the shaded area was X °F (Y °C) with a humidity of Z Installing Cool pavement is a relatively simple process which could greatly increase the health of our city.

Figure 2				
	Existing Hardscape Area (Sq. ft)			
		Ph.V. Carport	Cool Treatment	Tree Shade
Down Town	1,282,203	0	0	50%
CSUC	1,682,862	0	0	75%
Chico Mall	1,460,960	0	0	25%
Scenarios	10%			
Down Town	128,220	128,220	128,220	60%
CSUC	168,286	168,286	168,286	85%
Chico Mall	146,096	146,096	146,096	35%
	25%			
Down Town	320,551	320,551	320,551	75%
CSUC	420,716	420,716	420,716	100%
Chico Mall	365,240	365,240	365,240	50%
	50%			
Down Town	641,102	641,102	641,102	100%
CSUC	841,431	841,431	841,431	100%
Chico Mall	730,480	730,480	730,480	75%

Roadways

Practically, roadways stand to benefit from increased tree shade and cool pavement as well. Roadway repair is a section of city and state spending which can be greatly decreased by increasing tree shade, or converting existing pavement to cool pavement – both of which result in the increased durability and life-span of the road. There are roughly 1,689,911 square feet of road space defined in the Downtown area and approximately 1,047,883 square feet of roadway attributed to CSUC (no roadway was included in the Chico Mall definition). A total of 2,737,794 square feet of roadway would need to be repaired or replaced less often (by some accounts, the time between replacement was doubled), if the Downtown and CSUC campus updated to cool pavements – which could be a great way to save money. Although untraditional, cool roadways stand to mark environmentally pioneering cities.

Conclusion

In the tangible Abstract, we asked one imagine am environmentally pioneering city. Now stop imagining – take action. Take initiative, offer incentives and establish an expectation of quality –all of us. The practicality of the proposals is well founded and supported – even cost beneficial. Let us move past being a detriment to the earth and toward helping it (without detriment to our wallets). With hard work and motivation, we can help Chico can grow into a healthy city.

SKETCH OF CHICO HEAT-ISLAND PROFILE

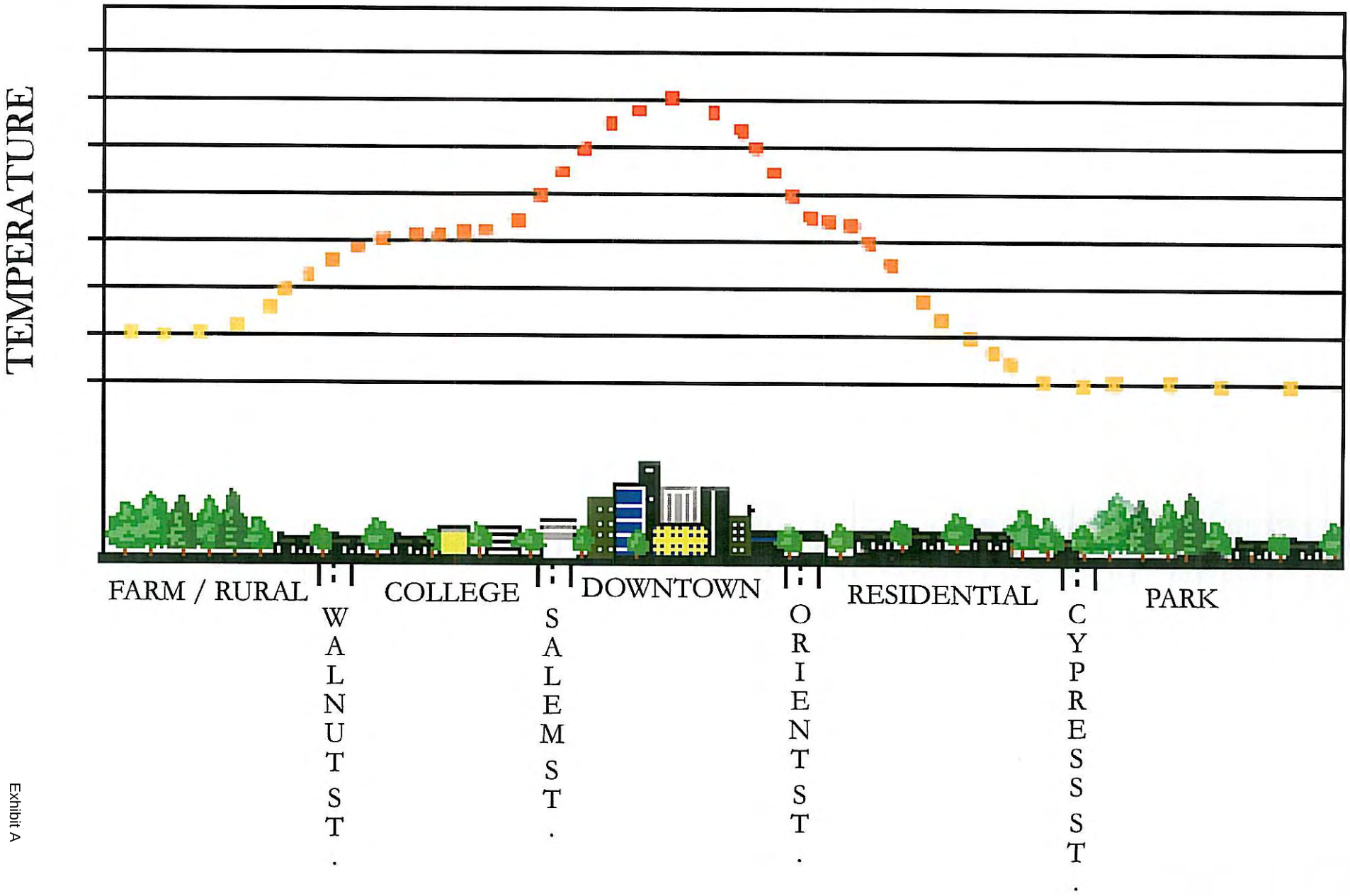
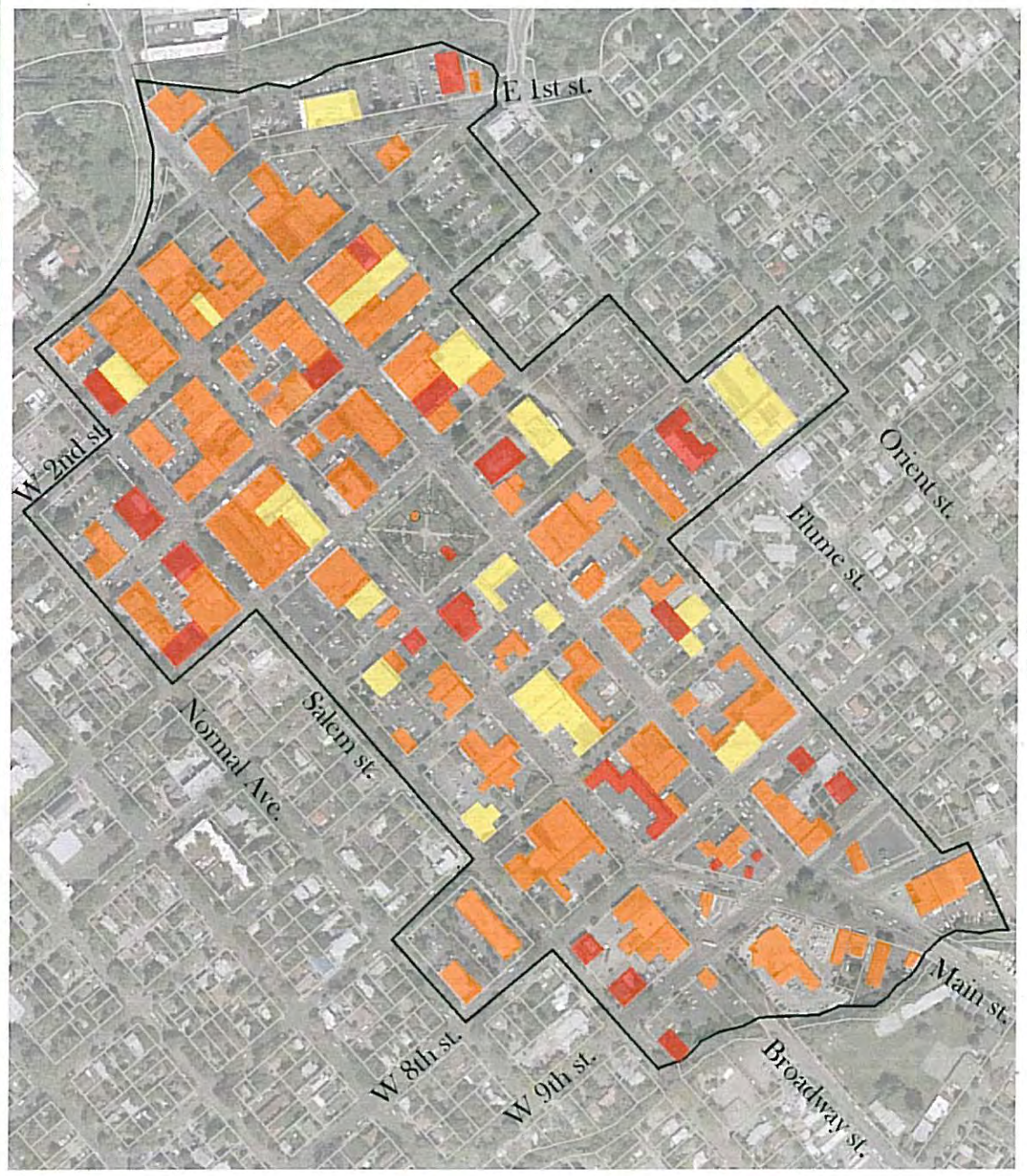


Exhibit A



LIGHT ROOFS GREY ROOFS DARK ROOFS

DOWNTOWN

DOWN TOWN LAND CLASSES

DOWN TOWN	AREA	%AGE
	4,275,826 SF	100 %
PARCEL AREA	2,585,915 SF	60 %
ROOF (TOTAL AREA)	1,285,646 SF	30 %
- OPTIMUM HEAT REFLECTIVE (LIGHT)	247,800 SF	5.8 %
- MEDIUM HEAT REFLECTING (GREY)	897,317 SF	20.9 %
- LESS HEAT REFLECTING (DARK)	140,529 SF	3.3 %
EXISTING HARDSCAPE	1,276,935 SF	30 %
TURF / GRASS	15,991 SF	.40 %
OTHER	7,343 SF	.20 %
ROAD WAY AREA		
	1,689,911 SF	40 %

GREEN LAND RETROFIT SCENARIOS

DOWNTOWN			LIGHT	MEDIUM	DARK
ROOF*	1,285,646 SF		247,800	902,585	135,261
SCENARIOS	10%	APPROX. # ROOFS			
	128,565	16	376,365	902,585	6,696
	25%				
	321,412	41	569,212	716,434	0
	50%				
	642,823	82	890,623	395,023	0

EXISTING HARDSCAPE	2,203 SF	Ph. V. CARPORT	COOL	TREE SHADE
SCENARIOS	10%	0	0	641,102 (50%)
	128,220	128,220	128,220	641,102 (50%)
	25%			
	320,551	320,551	320,551	641,102 (50%)
	50%			
	641,102	641,102	641,102	641,102 (50%)

*ROOF AREA WAS REMOVED FROM THE DARK AND GREY ROOFS AND ADDED TO THE LIGHT ROOFS, IN THIS ORDER. THIS IS MENT TO DEMOSTRATE THAT AS AN IDEAL, THE CITY SHOULD FOCUS FIRST ON CONVRTING DARK ROOFS.

PREDICTED BENEFITS

BENEFITS OF COOL ROOFING ARE DRAWN IN COMPARISON TO THE COSTS OF STANDARD ROOFS. DOWNTOWN ROOFS OF LIGHTER COLOR ON AVERAGE PAY x DOLLARS PER SQUARE FOOT ANNUALLY IN HEATING AND COOLING COSTS. GREY ROOFS PAY ON AVERAGE y DOLLARS PER SQUARE FOOT ANNUALLY IN HEATING AND COOLING AND DARK ROOFS PAY ON AVERAGE z DOLLAR PER SQUARE FOOT ANNUALLY IN HEATHING AND COOLING COSTS. THIS SHOULD MAKE EVIDENT THE COST BENEFITS OF INSTALLING COOL ROOFS.

ALTHOUGH NO STATISTICALLY COMPARABLE DATA HAS BEEN COLLECTED, GREEN ROOF BENEFITS ARE WELL DOCUMENTED AND ARE EXPECTED TO OFFER GREATER COST SAVINGS WITH TIME.

DOWNTOWN HOLDS ROUGHLY SEVEN TIMES THE AMOUNT OF LAND COVERED BY THE LARGEST LOCAL SOLAR CARPORT. IF A 130,680 SQUARE FEET ARRAY HAS A POWER CAPACITY OF 503 KWp, IN THEORY, THE DOWNTOWN EXISTING HARDSCAPES HAVE A POWER CAPACITY OF 3521KWp. IF INSTALLED IN GREAT NUMBER, SOLAR ARRAYS IN DOWNTOWN CHICO STAND TO POWER THE CITY.

IF CHICO INSTALLED COOL PAVEMENT AND ROADWAYS, APART FROM EARNING THE APPEARANCE OF A MODERN AND ENVIORMENTALLY CONSCIENCE CITY, THE GROUND AND AMBIENT AIR TEMPERATURE WILL BE MORE COMFORTABLE AND THE CITY COULD SAVE MONEY ON ROAD REPAIRS.

TANGIBLE ABSTRACT

IMAGINE A CITY IN WHICH THE CONCERN IS NOT OF HAVING AS LITTLE NEGATIVE IMPACT ON OUR ENVIORMENT BUT INSTEAD ON HOW WE CAN BEST IMPACT IT POSITIVELY. A CITY IN WHICH STORM WATER IS MANAGED BY VEGETATION, NOT MEN; ROOF TOPS AND ROADWAYS REFLECT AWAY MUCH OF THE SUN'S HEAT; TREES ARE PLACE TO PROVIDE A WEALTH OF SHADE THROUGHOUT URBAN AREAS; WHERE YOUR CAR IS POWERED BY THE OVERHANG THAT SHADES IT. THESE CONCEPTS ARE NOT BEYOND REACH. IN MANY CASES, THEY ARE ALREADY BEING DONE. THROUGH THE APPLICATION OF THE PROPOSED IMROVEMENTS, NOT ONLY CAN WE CREATE A TRULY HEALTHY CITY, OVER TIME, WE CAN SAVE MONEY DOING IT.

PROPOSAL

THE CITY OF CHICO'S DEFINED DOWNTOWN AREA IS COMPRISED OF APPROXIMANTELY SIXTY PERCENT PARCEL SPACE AND FORTY PRECENT ROADWAYS. OF THE PARCEL SPACE ABOUT HALF IS CATEGORIZED AS ROOF TOPS, THE OTHER HALF AS EXISTING HARDSCAPE.

AS A BOTTOM MARK, IT WOULD SEEM REASONABLE TO CONVERT ALL DOWNTOWN ROOFS TO COOL ROOFS, DUE TO COOL ROOFINGS RELATIVELY INEXPENSIVE COST AND APPRECIABLE ENERGY SAVINGS. FOR ROOFS ALREADY CONSIDERED LIGHT, THE INSTALLATION OF A GREEN ROOF COULD FURTHER THE BUSINESSES BENEFITS.

EXISTING HARDSCAPE, COMPRISED PRIMARILY OF PARKING, MAY LESS EASILY INCREASE TREE SHADE BUT COULD ALSO APPLY COOL MATERIALS. FOR WILLING BUSINESSES, SOLAR CARPORTS WOULD SERVE THE SPACE WELL.

ALTHOUGH UNTRADITIONAL, COOL MATERIALS APPLIED TO ROADWAYS COULD GREATLY COOL THE URBAN AREA, AND SAVE ROAD REPAIR COSTS BY INCREASING THE LIFESPAN OF THE ROADWAY. INCREASED TREE SHADE IS ENCOURGED, BUT THE CITY HAS APPROPRIATE ROAD TREE COVER.

GREEN ROOF RATIONAL

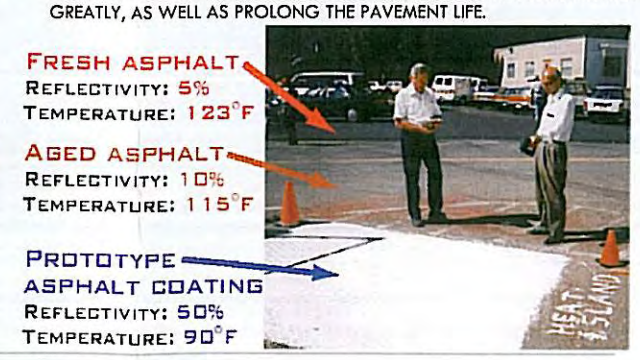
CONSIDERING THE RELATIVELY LARGE PERCENTAGE OF ROOF TOP AREA, AND AN OVERALL DOWNTOWN BEING LIGHT IN COLOR, GREEN ROOF INSTALLATION SHOULD BE CONSIDERED SERIOUSLY. ONE STUDY FOUND THE ALBEDO REQUIRED ON A WHITE ROOF NEEDED TO REPRODUCE THE SURFACE TEMPERATURE OBSERVED ON A GREEN ROOF WAS APPROXIMATELY BETWEEN 0.7 AND 0.85. SURFACE SOLAR REFLECTIVITIES IN THE RANGE OF 0.7-0.85 ARE AMONG THE BRIGHTEST SURFACES AVAILABLE FROM WHITE COATINGS. BEYOND THIS, GREEN ROOFS ALSO REDUCE STORM WATER RUN-OFF, CONSUME CARBON DIOXIDE, PRODUCES OXYGEN, INCREACES THE ROOFS LIFE SPAN, FILTERS POLLUTANTS, PROVIDES SOUND PROTECTION, INCREACES WILDLIFE HABITAT, CAN BE USED TO GROW FRUITS, VEGETABLES AND FLOWERS, AS WELL AS ADDS AN AESTHETIC APPEAL.

SOLAR CARPORT RATIONAL

SOLAR CARPORTS NOT ONLY PROVIDE SHADE, WHICH KEEPS CARS COOLER, IT HARNESSES THE ENERGY THAT WOULD HAVE MADE THE CARS HOTTER AND CONVERTS IT INTO USABLE ENERGY FOR THE FACILITY OR VEHICLES.THERE ARE APPROXIMATELY 1,282,203 SQUARE FEET OF EXISTING HARDSCAPE IN THE DEFINED DOWNTOWN AREA, A LARGE PORTION OF WHICH IS PARKING LOT. WITH ONLY 130,680 SQUARE FEET AN ARRAY WAS INSTALLED FOR JUST OVER ONE MILLION DOLLARS, OUTFITTED WITH JUST UNER 2300 MITSUBISHI 225 W CELLS, HAS A POWER CAPACITY OF 503 KWp AND IS ESTIMATED TO PAYBACK THE COST OF INSTALLATION IN SEVEN TO EIGHT YEARS. WITH ALL THE AVAILABLE SPACE, PARKING LOTS COULD BE UTILIZED TO POWER THE ENTIRE CITY.

Cool Roof Coating Systems

ROADWAY NOTE: ROADWAYS COULD BENEFIT FROM INCREASED TREE INSTALLATION OR COOL PAVEMENT APPLICATIONS. COOL PAVEMENTS, ALTHOUGH YOUNG, HAVE PROVEN TO REDUCE PAVEMENT AND AMBIENT AIR TEMPERATURES GREATLY, AS WELL AS PROLONG THE PAVEMENT LIFE.



Chico Roof Top Gardens

PRELIMINARY LANDSCAPE PLAN

Prepared for:

THE COMMON WEALTH

CHICO, CA
DOWNTOWN

SOLAR INFLUENCE

NORTH

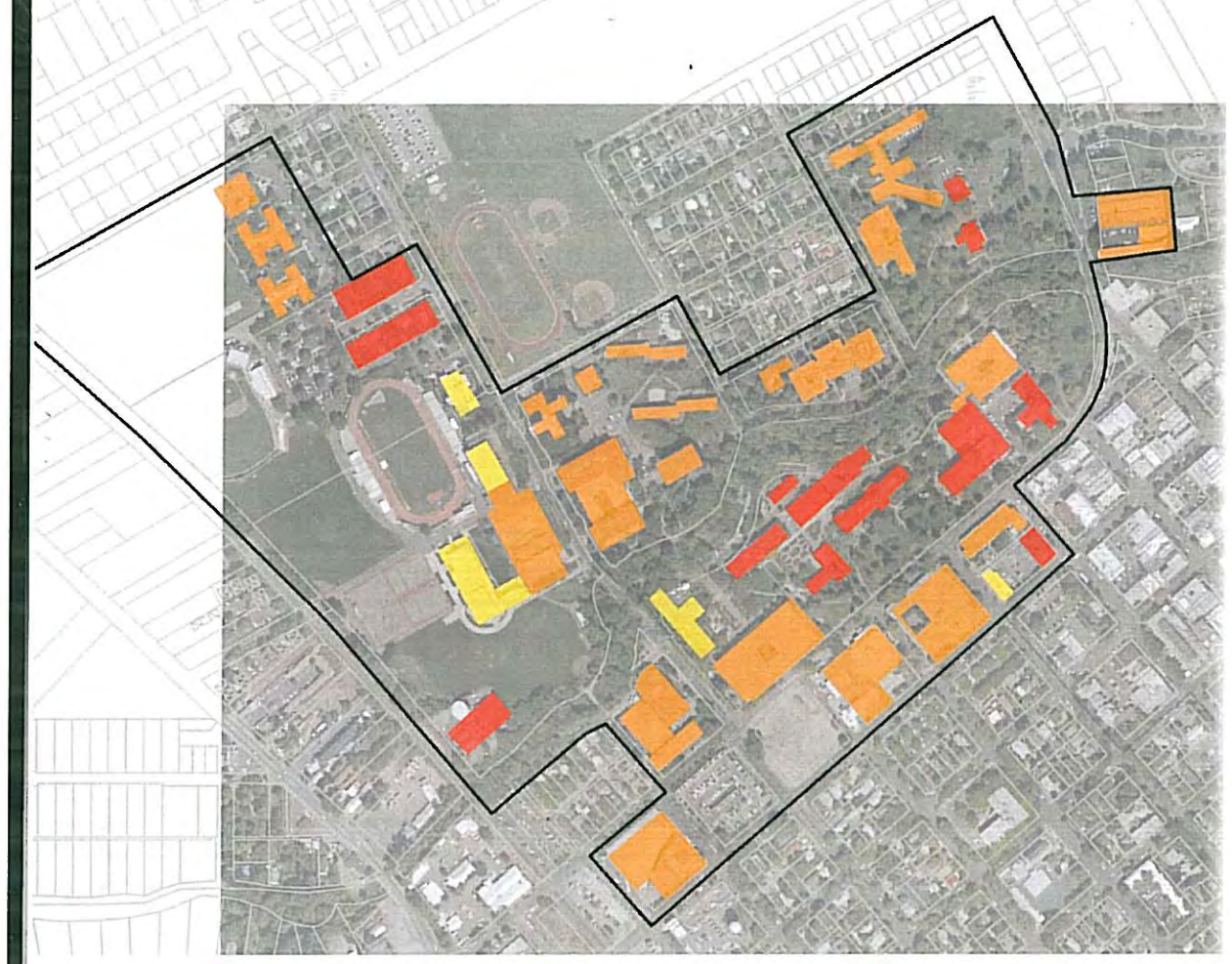
Prepared by:

LAND IMAGE
LANDSCAPE ARCHITECTS & PLANNERS
627 BROADWAY, CHICO, CALIFORNIA 95928
PHONE: (530) 899-1913 / FAX: (530) 899-1920

PROJECT NUMBER: 1463
DATE: 30 JUNE, 2009

Exhibit A

Exhibit A



LIGHT ROOFS GREY ROOFS DARK ROOFS

CSUC

Chico Roof Top Gardens

PRELIMINARY LANDSCAPE PLAN

Prepared for:

THE COMMON WEALTH

CHICO, CA
CSUC

CSUC LAND CLASSES

CSUC	AREA	%AGE
	6,426,977 SF	100 %
PARCEL AREA	4,928,279 SF	77 %
ROOF (TOTAL AREA)	1,190,581 SF	19 %
- OPTIMUM HEAT REFLECTIVE (LIGHT)	132,768 SF	2 %
- MEDIUM HEAT REFLECTING (GREY)	802,723 SF	13 %
- LESS HEAT REFLECTING (DARK)	255,090 SF	4 %
EXISTING HARDSCAPE	1,658,384 SF	26 %
TURF	2,079,314 SF	32 %
OTHER	96,507 SF	2.0 %
CREEK	354,308 SF	6.0 %
ROAD WAY AREA		
	1,047,883 SF	16 %

GREEN LAND RETROFIT SCENARIOS

CSUC			LIGHT	MEDIUM	DARK
ROOF*	1,116,103 SF		132,768	802,723	225,090
SCENARIOS	10%	APPROX. # ROOFS			
	116,610	6	249,378	802,723	138,480
	25%				
	291,526	14	424,294	766,287	0
	50%				
	583,052	28	715,820	474,761	0

EXISTING HARDSCAPE	1,682,862 SF	Ph. V. CARPORT	COOL	TREE SHADE
SCENARIOS	10%	0	0	1,262,147 (75%)
	168,286	168,286	168,286	1,262,147 (75%)
	25%			
	420,716	420,716	420,716	1,262,147 (75%)
	50%			
	841,431	841,431	841,431	1,262,147 (75%)

*ROOF AREA WAS REMOVED FROM THE DARK AND GREY ROOFS AND ADDED TO THE LIGHT ROOFS, IN THIS ORDER. THIS IS MENT TO DEMOSTRATE THAT AS AN IDEAL, THE CITY SHOULD FOCUS FIRST ON CONVERTING DARKER ROOFS.

PREDICTED BENEFITS

BENEFITS OF COOL ROOFING ARE DRAWN IN COMPARISON TO THE COSTS OF STANDARD ROOFS. ROOFS OF LIGHTER COLOR ON AVERAGE PAY x DOLLARS PER SQUARE FOOT ANNUALLY IN HEATING AND COOLING COSTS. GREY ROOFS PAY ON AVERAGE y DOLLARS PER SQUARE FOOT ANNUALLY IN HEATHING AND COOLING AND DARK ROOFS PAY ON AVERAGE z DOLLAR PER SQUARE FOOT ANNUALLY IN HEATHING AND COOLING COSTS. THIS SHOULD MAKE EVIDENT THE COST BENEFITS OF INSTALLING COOL ROOFS. DECREASED USE OF AIR CONDITIONING UNIT WILL CONTRIBUT TO A HEALTHIER ENVIORNMENT. THE COOL ROOFS ALSO PROVIDE SCIENTIFIC DATA FOR THE STUDENTS OF THE UNIVERSITY.

ALTHOUGH NO STATISTICALLY COMPARABLE DATA HAS BEEN COLLECTED, GREEN ROOF BENEFITS ARE WELL DOCUMENTED AND ARE EXPECTED TO OFFER GREATER COST SAVINGS WITH TIME. ALSO, CSUC COULD BOST BEING A TRULY GREEN CAMPUS.

CSUC HOLDS NINE TIMES THE AMOUNT OF EXISTING HARDSCAPE COVERED BY THE LARGEST LOCAL SOLAR CARPORT. IF A 130,680 SQUARE FEET ARRAY HAS A POWER CAPACITY OF 503 KWp, IN THEORY, THE UNIVERSITY'S EXISTING HARDSCAPE HAS A POTENTIAL POWER CAPACITY OF 4527 KWp. IF INSTALLED IN GREAT NUMBER, SOLAR ARRAYS AT CSU, CHICO STAND TO POWER THE ENTIRE SCHOOL.

IF CHICO STATE INSTALLED COOL PAVEMENT AND ROADWAYS, APART FROM EARNING THE APPEARANCE OF A MODERN AND ENVIORMENTALLY CONSCIENCE SCHOOL, THE GROUND AND AMBIENT AIR TEMPERATURE WILL BE MORE COMFORTABLE AND THE UNIVERSITY COULD SAVE MONEY ON ROAD REPAIRS.

TANGIBLE ABSTRACT

IMAGINE A CITY IN WHICH THE CONCERN IS NOT OF HAVING AS LITTLE NEGATIVE IMPACT ON OUR ENVIORMENT BUT INSTEAD ON HOW WE CAN BEST IMPACT IT POSITIVELY. A CITY IN WHICH STORM WATER IS MANAGED BY VEGETATION, NOT MEN; ROOF TOPS AND ROADWAYS REFLECT AWAY MUCH OF THE SUN'S HEAT; TREES ARE PLACE TO PROVIDE A WEALTH OF SHADE THROUGHOUT URBAN AREAS; WHERE YOUR CAR IS POWERED BY THE OVERHANG THAT SHADES IT. THESE CONCEPTS ARE NOT BEYOND REACH. IN MANY CASES, THEY ARE ALREADY BEING DONE. THROUGH THE APPLICATION OF THE PROPOSED IMROVEMENTS, NOT ONLY CAN WE CREATE A TRULY HEALTHY CITY, OVER TIME, WE CAN SAVE MONEY DOING IT.

PROPOSAL

CALIFORNIA STATE UNIVERSITY, CHICO IS COMPRISED OF SEVENTY SEVEN PERCENT PARCEL SPACE, SIXTEEN PERCENT ROADWAYS, AND SIX PERCENT WAS ALOTTED TO CREEK AREA. OF THE PARCEL SPACE ABOUT NINETEEN PERCENT IS CATEGORIZED AS ROOF TOPS, TWENTY SIX AS EXISTING HARDSCAPE AND THIRTY TWO PERCENT AS TURF.

IT WOULD SEEM REASONABLE TO CONVERT ALL CSUC ROOFS TO COOL ROOFS (WITH THE EXCEPTION OF SPANISH TILED ROOFS DUE TO HISTORICAL AND THEMATIC VALUE), DUE TO COOL ROOFINGS RELATIVELY INEXPENSIVE COST AND APPRECIABLE ENERGY SAVINGS. FOR ROOFS ALREADY CONSIDERED LIGHT, THE INSTALLATION OF A GREEN ROOF COULD FURTHER THE BENEFITS.

EXISTING HARDSCAPE IN THE CSUC AREA HAVE AMPLE TREE SHADE BUT COULD ALWAYS INCREASE OR ALSO APPLY COOL MATERIALS. FOR PARKING LOTS, THE INSTALLATION OF SOLAR CARPORTS COULD PRODUCE ENERGY FOR UNIVERSITY FACILITIES.

ALTHOUGH UNTRADITIONAL, COOL ROADWAYS COULD GREATLY COOL THE AREA, AND SAVE ROAD REPAIR COSTS BY INCREASING ROAD LIFESPAN.

THE UNIVERSITY COULD COOPERATE WITH STUDENTS TO INSTALL, MANAGE, STUDY AND MAINTAIN ANY GREEN INFRASTRUCTURE. CSUC HAS ACCESS TO WILLING AND ABLE YOUTH, INTERESTED IN SUCH INVESTMENTS, AND IT WOULD BE WISE TO UDITLIZE IT.

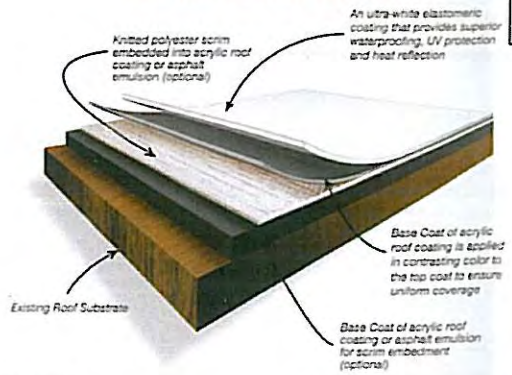
GREEN ROOF RATIONAL

GREEN ROOF INSTALLATION WOULD NOT ONLY AS A MOENY SAVER FOR THE BUILDINGS, THEY WOULD BE VALUABLE LEARNING TOOLS FOR STUDENTS. ONE STUDY FOUND THE ALBEDO REQUIRED ON A WHITE ROOF NEEDED TO REPRODUCE THE SURFACE TEMPERATURE OBSERVED ON A GREEN ROOF WAS APPROXIMATELY BETWEEN 0.7 AND 0.85. SURFACE SOLAR REFLECTIVITIES IN THE RANGE OF 0.7-0.85 ARE AMONG THE BRIGHTEST SURFACES AVAILABLE FROM WHITE COATINGS. BEYOND THIS, GREEN ROOFS ALSO REDUCE STORM WATER RUN-OFF, CONSUME CARBON DIOXIDE, PRODUCES OXYGEN, INCREACES THE ROOFS LIFE SPAN, FILTERS POLLUTANTS, PROVIDES SOUND PROTECTION, INCREACES WILDLIFE HABITAT, CAN BE USED TO GROW FRUITS, VEGETABLES AND FLOWERS, AS WELL AS ADDS AN AESTHETIC APPEAL. GREEN ROOFS CAN PROVIDE THE UNIVERSITY THE ABILITY TO PIONEER THE ENVIORMENTAL MOVEMENT LOCALLY.

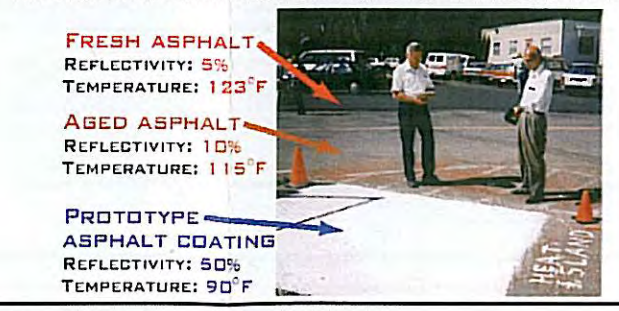
SALOR CARPORT RATIONAL

SOLAR CARPORTS NOT ONLY PROVIDE SHADE, WHICH KEEPS CARS COOLER, IT HARNESSES THE ENERGY THAT WOULD HAVE MADE THE CARS HOTTER AND CONVERTS IT INTO USABLE ENERGY FOR THE FACILITY OR VEHICLES.THERE ARE APPROXIMATELY 1,282,203 SQUARE FEET OF EXISTING HARDSCAPE IN THE DEFINED DOWNTOWN AREA, A LARGE PORTION OF WHICH IS PARKING LOT. WITH ONLY 130,680 SQUARE FEET AN ARRAY WAS INSTALLED FOR JUST OVER ONE MILLION DOLLARS, OUTFITTED WITH JUST UNER 2300 MITSUBISHI 225 W CELLS, HAS A POWER CAPACITY OF 503 KWp AND IS ESTIMATED TO PAYBACK THE COST OF INSTALLATION IN SEVEN TO EIGHT YEARS. WITH ALL THE AVAILABLE SPACE, PARKING LOTS COULD BE UTILIZED TO POWER THE ENTIRE CITY.

Cool Roof Coating Systems



ROADWAY NOTE: ROADWAYS COULD BENEFIT FROM INCREASED TREE INSTALLATION OR COOL PAVEMENT APPLICATIONS. COOL PAVEMENTS, ALTHOUGH YOUNG, HAVE PROVEN TO REDUCE PAVEMENT AND AMBIENT AIR TEMPERATURES GREATLY, AS WELL AS PROLONG THE PAVEMENT LIFE.



SOLAR INFLUENCE

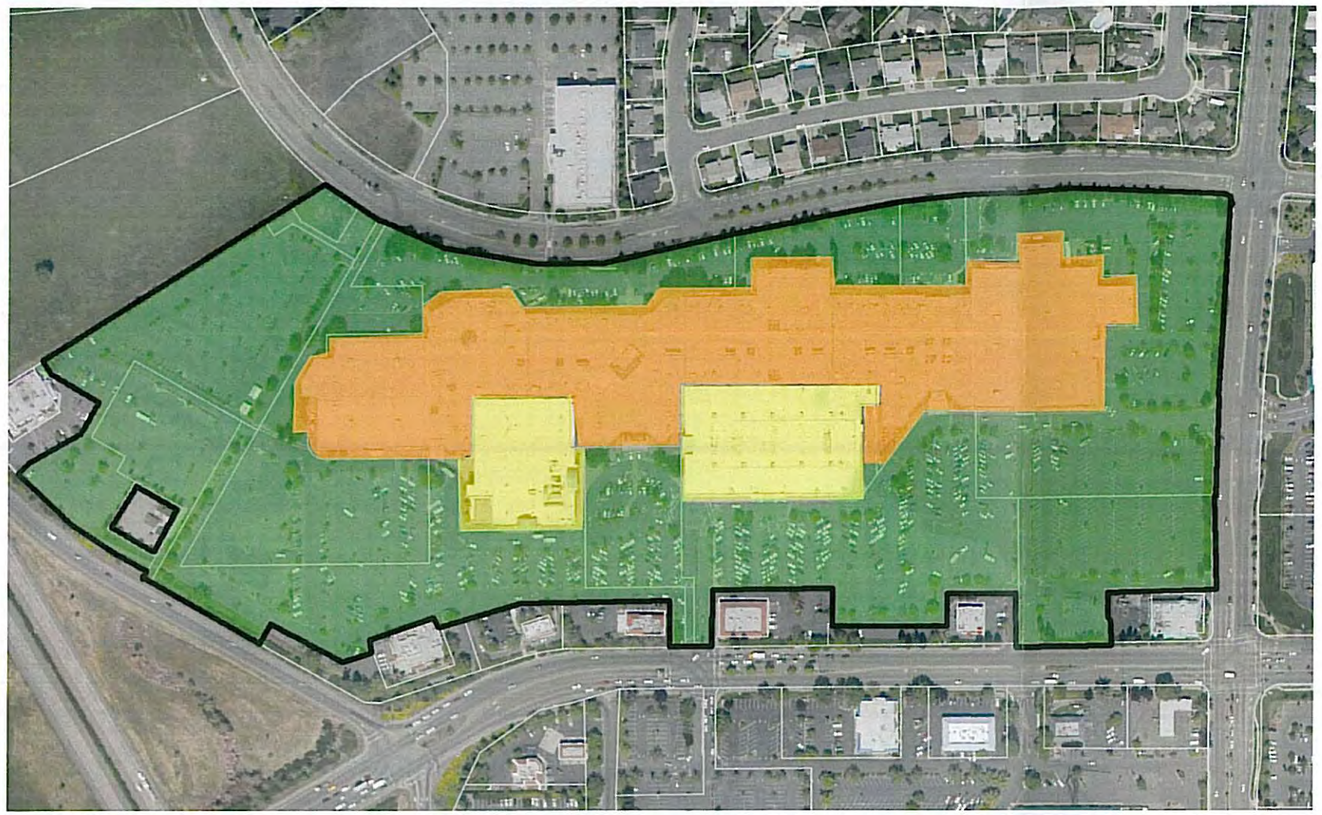
NORTH

Prepared by:

LAND IMAGE
LANDSCAPE ARCHITECTS & PLANNERS
627 BROADWAY, CHICO, CALIFORNIA 95928
PHONE (530) 899-1913 / FAX: (530) 899-1920

PROJECT NUMBER: 1463
DATE: 30 JUNE, 2009

CHICO MALL



LIGHT ROOFS

GREY ROOFS

EXISTING HARDSCAPE

LAND CLASSES

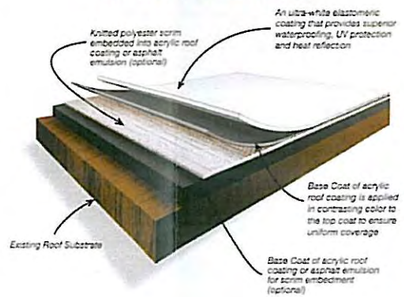
CHICO MALL	AREA	%AGE
	1,790,714 SF	100 %
PARCEL AREA	1,790,714 SF	100 %
ROOF (TOTAL AREA)	329,754 SF	18 %
- OPTIMUM HEAT REFLECTIVE (LIGHT)	161,703 SF	11 %
- MEDIUM HEAT REFLECTIVE (GREY)	128,749 SF	7 %
- LESS HEAT REFLECTING (DARK)	0 SF	0 %
EXISTING HARDSCAPE	1,460,960 SF	82 %
TURF / GRASS	0 SF	0 %
CREEK	0 SF	0 %
OTHER	0 SF	0 %
ROAD WAY AREA		
	0 SF	0 %

GREEN LAND RETROFIT SCENARIOS

	MALL		LIGHT	MEDIUM	DARK
ROOF*	329,754 SF		161,703	128,749	0
SCENARIOS	10%	APPROX. # ROOFS			
	32,975	.1	194,678	95,774	0
	25%				
	82,439	.25	224,142	46,310	0
	50%				
	164,877	.50	329,754	0	0
EXISTING HARDSCAPE	1,460,960 SF	Ph. V. CARPORT	COOL		TREE SHADE
SCENARIOS	10%	0	0		365,240 (25%)
	146,096	146,096	146,096		365,240 (25%)
	25%				
	365,240	365,240	365,240		365,240 (25%)
	50%				
	730,480	730,480	730,480		365,240 (25%)

*ROOF AREA WAS REMOVED FROM THE DARK AND GREY ROOFS AND ADDED TO THE LIGHT ROOFS, IN THIS ORDER. THIS IS MENT TO DEMOSTRATE THAT AS AN IDEAL, THE CITY SHOULD FOCUS FIRST ON CONVERTING DARK ROOFS.

Cool Roof Coating Systems



TANGIBLE ABSTRACT

IMAGINE A CITY IN WHICH THE CONCERN IS NOT OF HAVING AS LITTLE NEGATIVE IMPACT ON OUR ENVIORMENT BUT INSTEAD ON HOW WE CAN BEST IMPACT IT POSITIVELY. A CITY IN WHICH STORM WATER IS MANAGED BY VEGETATION, NOT MEN; ROOF TOPS AND ROADWAYS REFLECT AWAY MUCH OF THE SUN'S HEAT; TREES ARE PLACE TO PROVIDE A WEALTH OF SHADE THROUGHOUT URBAN AREAS; WHERE YOUR CAR IS POWERED BY THE OVERHANG THAT SHADES IT. THESE CONCEPTS ARE NOT BEYOND REACH. IN MANY CASES, THEY ARE ALREADY BEING DONE. THROUGH THE APPLICATION OF THE PROPOSED IMROVEMENTS, NOT ONLY CAN WE CREATE A TRULY HEALTHY CITY, OVER TIME, WE CAN SAVE MONEY DOING IT.

PROPOSAL

THE CHICO MALL'S DEFINED AREA IS COMPRISED OF APPROXIMANTELY EIGHTEEN PERCENT ROOF TOP AND EIGHTY - TWO PERCENT EXISTING HARDSCAPE - NO TRUE ROAD WAYS WERE INCLUDED IN THE MALL AREA.

AS A BOTTOM MARK, IT WOULD SEEM REASONABLE TO CONVERT THE ENTURE MALL ROOF TO COOL ROOFS, DUE TO COOL ROOFINGS RELATIVELY INEXPENSIVE COST AND APPRECIABLE ENERGY SAVINGS. FOR ROOF ALREADY CONSIDERED LIGHT, THE INSTALLATION OF A GREEN ROOF COULD FURTHER THE BUSINESSES BENEFITS.

EXISTING HARDSCAPE, COMPRISED PRIMARILY OF PARKING, MAY LESS EASILY INCREASE TREE SHADE BUT COULD ALSO APPLY COOL MATERIALS. SOLAR CARPORTS SHOULD BE CONSIDERED SERIOUSLY, AS THE CHICO MALL'S CAPACITY FOR SOLAR CARPORT ENERGY CONTRIBUTION IS RELATIVELY HUGE FOR ONE BUILDING.

ALTHOUGH UNTRADITIONAL, COOL MATERIALS APPLIED TO PARKING LOTS COULD GREATLY COOL THE AREA, AND SAVE ROAD REPAIR COSTS BY INCREASING THE LIFESPAN OF THE PAVEMENT. INCREASED TREE SHADE IS ENCOURGED, BUT SHOULD BE CONSIDERED EXPECTING PAVEMENT REMOVAL AND TREE INSTALLATION COSTS.

GREEN ROOF RATIONAL

CONSIDERING THE RELATIVELY LARGE PERCENTAGE OF ROOF TOP AREA COMPRISED BY THE MALL, GREEN ROOF INSTALLATION SHOULD BE CONSIDERED SERIOUSLY. ONE STUDY FOUND THE ALBEDO REQUIRED ON A WHITE ROOF NEEDED TO REPRODUCE THE SURFACE TEMPERATURE OBSERVED ON A GREEN ROOF WAS APPROXIMATELY BETWEEN 0.7 AND 0.85. SURFACE SOLAR REFLECTIVITIES IN THE RANGE OF 0.7-0.85 ARE AMONG THE BRIGHTEST SURFACES AVAILABLE FROM WHITE COATINGS. BEYOND THIS, GREEN ROOFS ALSO REDUCE STORM WATER RUN-OFF, CONSUME CARBON DIOXIDE, PRODUCES OXYGEN, INCREACES THE ROOFS LIFE SPAN, FILTERS POLLUTANTS, PROVIDES SOUND PROTECTION, INCREACES WILDLIFE HABITAT, CAN BE USED TO GROW FRUITS, VEGETABLES AND FLOWERS, AS WELL AS ADDS AN AESTHETIC APPEAL. APART FROM HELPING THE ENVIORMENT AND THE MALL'S POCKET BOOK, GREEN ROOFING COULD BOOST THE MALLS APPEAL AND DRAW ATTENTION AND PUBLICITY.

SOLAR CARPORT RATIONAL

SOLAR CARPORTS NOT ONLY PROVIDE SHADE, WHICH KEEPS CARS COOLER, IT HARNESSES THE ENERGY THAT WOULD HAVE MADE THE CARS HOTTER AND CONVERTS IT INTO USABLE ENERGY FOR THE FACILITY OR VEHICLES.THERE ARE APPROXIMATELY 1,460,096 SQUARE FEET OF EXISTING HARDSCAPE IN THE DEFINED DOWNTOWN AREA, A LARGE PORTION OF WHICH IS PARKING LOT. WITH ONLY 130,680 SQUARE FEET AN ARRAY WAS INSTALLED FOR JUST OVER ONE MILLION DOLLARS, OUTFITTED WITH JUST UNER 2300 MITSUBISHI 225 W CELLS, HAS A POWER CAPACITY OF 503 KWp AND IS ESTIMATED TO PAYBACK THE COST OF INSTALLATION IN SEVEN TO EIGHT YEARS. WITH ALL THE AVAILABLE SPACE, PARKING LOTS COULD BE UTILIZED TO POWER THE ENTIRE MALL, OR MORE. SOLAR CARPORTS WOULD MAKE THE CHICO MALL A MORE APPEALING PLACE TO SHOP, AND THE SHADE THEY CREATE WOULD MAKE PARKING AT THE MALL MORE PLEASANT.

PREDICTED BENEFITS

BENEFITS OF COOL ROOFING ARE DRAWN IN COMPARISON TO THE COSTS OF STANDARD ROOFS. ROOFS OF LIGHTER COLOR ON AVERAGE PAY x DOLLARS PER SQUARE FOOT ANNUALLY IN HEATING AND COOLING COSTS. GREY ROOFS PAY ON AVERAGE y DOLLARS PER SQUARE FOOT ANNUALLY IN HEATING AND COOLING AND DARK ROOFS PAY ON AVERAGE z DOLLAR PER SQUARE FOOT ANNUALLY IN HEATHING AND COOLING COSTS. THIS SHOULD MAKE EVIDENT THE COST BENEFITS OF INSTALLING COOL ROOFS. THE MALL IS KEPT COOLER THAN MANY BUILDINGS FOR COMFORT AND A COOL ROOF COULD REDUSE THE AMOUNT OF COOLING NECESSARY TO REACH THIS COOLER TEMPERATURE - KEEPING THE ENVIORNMENT HEALTHIER.

ALTHOUGH NO STATISTICALLY COMPARABLE DATA HAS BEEN COLLECTED, GREEN ROOF BENEFITS ARE WELL DOCUMENTED AND ARE EXPECTED TO OFFER GREATER COST SAVINGS WITH TIME. ALSO, THE MALL COULD BOST BEING THE FIRST MALL IN THE NORTH STATE TO INSTALL A GREEN ROOF.

THE MALL HOLDS EIGHT TIMES THE AMOUNT OF LAND COVERED BY THE LARGEST LOCAL SOLAR CARPORT. IF A 130,680 SQUARE FEET ARRAY HAS A POWER CAPACITY OF 503 KWp, IN THEORY, THE EXISTING HARDSCAPE AT THE MALL HAS A POTENTIAL POWER CAPACITY OF 4024 KWp. IF INSTALLED IN GREAT NUMBER, SOLAR ARRAYS AT THE MALL STAND TO POWER THE ENTIRE BUILDING,OR MORE.

IF THE MALL INSTALLED COOL PAVEMENT, APART FROM EARNING THE APPEARANCE OF BEING MODERN AND ENVIORMENTALLY CONSCIENCE, THE GROUND AND AMBIENT AIR TEMPERATURE WILL BE MORE COMFORTABLE AND THE MALL COULD SAVE MONEY ON REPAIRS.

Chico Roof Top Gardens

PRELIMINARY LANDSCAPE PLAN

Prepared for:

THE COMMON WEALTH
CHICO, CA
CHICO MALL

SOLAR INFLUENCE

NORTH

Prepared by:

LAND IMAGE
LANDSCAPE ARCHITECTS & PLANNERS
627 BROADWAY, CHICO, CALIFORNIA 95928
PHONE: (530) 899-1913 / FAX: (530) 899-1920

PROJECT NUMBER: 1463
DATE: 30 JUNE, 2009

Exhibit A

Sustainability Task Force Agenda Staff Report Meeting Date: 8/3/09

DATE: July 24, 2009

TO: SUSTAINABILITY TASK FORCE

FROM: GENERAL SERVICES ADMINISTRATIVE MANAGER, Linda Herman, 896-7241

RE: CONSIDERATION OF PROPOSED REVISIONS TO THE CHICO MUNICIPAL CODE REGARDING RESIDENTIAL ENERGY CONSERVATION MEASURES REQUIRED UPON RESALE.

RECOMMENDATION:

The Sustainability Task Force is requested to provide recommendations on whether to forward these proposed amendments to the City Council for consideration.

BACKGROUND:

Section 16.60 of the Chico Municipal Code (CMC), which was adopted in 1990, requires the installation of certain energy conservation measures upon the sale, transfer, or exchange of existing residential housing. A copy of this Code section is attached as Exhibit "A." Given the date these requirements were adopted, the City's Building Official felt it was worthy to review and make reasonable adjustments to bring them more in line with current and easily obtainable energy efficiency standards.

DISCUSSION:

At its 7/6/09 meeting, the Task Force considered the following proposed CMC revisions, which are also noted in red in the attached Exhibit "B":

1. Changing the applicability of these requirements to duplexes and single-family homes constructed before 1990 instead of 1983, and to multifamily dwellings constructed before June 1991.
2. Upgrading the Ceiling Insulation minimum requirement from a thermal resistance rating of R-19 to R-30.
3. Adding the provision to require under-floor insulation with a minimum rating of R-19 for houses where feasible.
4. Adding the insulation of the hot and cold water lines to water heaters.
5. Adding requiring low-flow (2.75 gallons per minute flow) and/or aerators on all sink faucets.
6. Adding requiring low-flow (1.6 gallon/flush) toilets.
7. Adding requiring permanently affixed weather-stripping and door sweeps.
8. Adding requiring duct insulation to a minimum of R-4-2.
9. Requiring re-inspection of all home resales
10. Increasing the $500 cost limitation in Section 16.60.110, a 1990 figure.
11. Adding that Title companies not close escrow until the energy conservation certification is approved.

The Task Force also discussed the need to publicize the existing requirements since many are not aware of them and they are not being enforced. The Task Force continued this discussion to today's meeting, and requested staff to provide information regarding the change in the Engineering News Construction Cost Index from 1990 to present to determine whether the cost limitation should be increased. The Construction Cost Index increased 60% from 1990 to 2009, which when applied to the current $500 cost limitation increases the limit to $800. Staff also received the attached letter from Gabe Baradat from Johns Manville Insulation Systems regarding this item.

ATTACHMENTS:
Exhibit "A": CMC Section 16.60
Exhibit "B": Building Official Proposed CMC Revisions
Exhibit "C": Gabe Baradat letter

Chapter 16.60

ENERGY CONSERVATION MEASURES REQUIRED INCIDENT TO TRANSFERS OF RESIDENTIAL HOUSING

Section:

16.60.010 Purpose.

This chapter is adopted pursuant to the municipal affairs provisions of Section 201 of the city Charter for the purpose of requiring residential housing sold, exchanged, or otherwise transferred within the city to be provided with ceiling insulation and other energy conservation measures necessary to meet minimum energy conservation standards. (Ord. 1843 §1 (part))

16.60.020 Administration by building official.

The building official shall be primarily responsible for administration of the provisions of this chapter subject to the overall direction and control of the director. In carrying out such responsibilities, the building official, or an authorized representative, shall issue the energy conservation compliance certificates required by this chapter incident to a transfer of residential housing, conduct the inspections of residential housing necessary to issue such compliance certificates, grant authorization to make such inspections to persons qualified to do so, and enforce all other provisions of this chapter

as hereinafter provided for.
(Ord. 1843 §1 (part), Ord. 2012 §3 (part), Ord. 2268, Ord. 2364 §332)

16.60.030 Administrative review of a determination or an action of the building official by the director.

A. Right to Administrative Review. Any person aggrieved by a determination made or action taken by the building official pursuant to this chapter may apply to the director for administrative review of such determination or action.

B. Applications for Administrative Review. Applications for administrative review of a determination made or action taken by the building official shall be made in writing and shall be filed in the office of the director no later than 15 days following the date such determination or action was made or taken, or where a written report is required to be served, the date such report is served; provided that the director may extend the time for filing an application for good cause shown. In addition to setting forth a request for administrative review of a determination made or action taken by the building official, such application shall contain a brief statement of the reasons why the applicant believes that such determination or action does not comply with the provisions of this chapter and the relief requested by the applicant from such determination or action.

C. Decision on an Application for Administrative Review. Upon the filing of an application for administrative review of a determination made or action taken by the building official, the director shall consider the application and render a decision either affirming the determination or action of the building official, or reversing or modifying such determination or action. Prior to rendering a decision, the director may, with sole discretion, convene an informal hearing for the purpose of reviewing evidence or hearing arguments bearing on such decision, provided notice of the date, time, and place of such hearing is served a reasonable time prior to such hearing on the applicant and on any other person who would be aggrieved by a decision reversing or modifying the determination or action of the building official and who has filed with the director a written request for notice of such decision. After rendering a decision, the director shall promptly inform the building official of the decision and cause a notice of the decision to be served on the applicant and any other person who would be aggrieved by a decision reversing or modifying the determination or action of the building official and who has filed with the director a written request for notice of such decision.

(Ord. 1843 §1 (part), Ord. 2012 §3 (part), Ord. 2268, Ord. 2364 §333)

16.60.040 Appeal from decision of the director.

Any person aggrieved by a decision of the director following the filing of an application for the administrative review of a determination made or action taken by the building official, may appeal such decision to the city council within the time and in the manner provided for by Title 2 of this code.
(Ord. 1843 §1 (part), Ord. 2004 §23, Ord. 2012 §3 (part), Ord. 2364 §334)

16.60.050 Administrative review and appeals - Aggrieved person.

A person shall be deemed "aggrieved" for purposes of the administrative review of a determination made or action taken by the building official pursuant to this chapter, or for

purposes of the appeal of a decision of the director following the filing of an application for administrative review of such determination or action, if such a person is an owner, transferee or occupant of the building or structure which is the subject of such determination, action or decision.
(Ord. 1843 §1 (part), Ord. 2012 §3 (part), Ord. 2364 §335)

16.60.060 Residential housing defined.

The term "residential housing," as used in this chapter, shall mean any building or structure designed or used as a residence, provided, however, that the term "residential housing" shall not include "mobile homes," "manufactured housing," or "factory-built housing" as defined in Division 13 of the California Health and Safety Code (commencing with Section 17000 of the Health and Safety Code).
(Ord. 1843 §1 (part))

16.60.070 Sales, exchanges, and other transfers of residential housing subject to chapter.

Except as otherwise provided for herein, this chapter shall apply to any sale, exchange, or other transfer of a legal or equitable interest in and to the fee simple title to real property containing residential housing which entitles the transferee to possession of such housing, or any sale, exchange or other transfer of a separate interest in a "community apartment project," a "condominium project," or a "stock cooperative" as defined in Division 2 of the California Civil Code (commencing with Section 761 of the Civil Code), which entitles the transferee to possession of a residential dwelling unit located within such project or cooperative.
(Ord. 1843 §1 (part))

16.60.080 Sales, exchanges, and other transfers of residential housing subject to chapter - Exceptions.

This chapter shall not apply to the following transfers of residential housing:

A. The sale, exchange, or other transfer of residential housing which contains no more than two dwelling units and was constructed pursuant to a building permit issued on or after June 1, 1983, or residential housing containing three or more dwelling units which was constructed on or after June 1, 1984;
B. The sale, exchange, or other transfer of residential housing which was inspected and certified as being in compliance with the energy conservation standards adopted by this chapter or included in Ordinance No. 1480 adopted by the city council on October 5, 1982;
C. Sales, exchanges, or other transfers of residential housing pursuant to a court order, including, but not limited to sales, exchanges, or other transfers ordered by a probate court incident to the administration of an estate, sales or other transfers made pursuant to a writ of execution, sales in any judicial foreclosure sale, sales, exchanges, or other transfers by a trustee in bankruptcy, and sales, exchanges, or other transfers resulting from a decree for specific performance;
D. Sales or other transfers of residential housing to a mortgagee by a mortgagor in default, sales or other transfers to a beneficiary of a deed of trust by a trustor who is in default, and sales in any nonjudicial foreclosure sale after a default in the obligations

secured by a mortgage, deed of trust, or other instrument containing such power of sale;

E. Sales or other transfers of residential housing from one co-owner to one or more other co-owners;

F. Sales or other transfers of residential housing made to a spouse, or to a person or persons in the lineal line of consanguinity of one or more of the transferor;

G. Sales or other transfers of residential housing between spouses resulting from a decree of dissolution of marriage or a decree of legal separation, or from a property settlement agreement incident to such a decree; and

H. Sales, exchanges, or other transfers of residential housing to or from any governmental entity.

(Ord. 1843 §1 (part))

16.60.090 Agreements providing for the sale, exchange, or other transfer of residential housing.

Any agreement providing for the sale, exchange, or other transfer of residential housing subject to the provisions of this chapter, including any agreement granting an option to acquire such housing, shall include a provision which states as follows:

This agreement and the sale, exchange or other transfer of residential housing provided for by this agreement may be subject to the provisions of Title 16 of the Chico Municipal Code which prohibits the sale, exchange or other transfer of residential housing unless and until the city building official has certified that such housing is in compliance with the energy conservation standards adopted in Title 16 of the Chico Municipal Code.

(Ord. 1843 §1 (part))

16.60.100 Energy conservation standards to be complied with incident to the sale, exchange or other transfer of residential housing.

No person shall sell, exchange, or otherwise transfer residential housing subject to the provisions of this chapter unless and until the building official has certified that such housing is in compliance with the following energy conservation standards:

A. The ceilings of all inhabitable portions of such residential housing shall be overlaid with insulation which has a minimum thermal resistance rating of at least R-19 except:
   1. Where such ceilings are overlaid with insulation having a thermal resistance rating of not less than R-13 which was installed prior to March 23, 1978; or
   2. Where the attic of such buildings has a headroom of less than 30 inches at the attic peak.

B. All electric resistance domestic water heaters, and all natural gas or other fossil fueled domestic water heaters, shall be fitted with external insulation blankets with a minimum thermal resistance rating of R-6 except:
   1. Where the thermal resistance rating of insulation within the water heater is at least R-12; or
   2. Where it is impractical to wrap the water heater with an external insulating blanket by reason of the fact that the distance between the heater and an adjoining wall is less than two inches; or

3. Where the manufacturer's instructions for the water heater would preclude the water heater from being fitted with an external insulation blanket.

C. All shower fixtures shall be fitted with in-line shower restrictors or low flow shower heads which restrict the maximum flow of water to not more than three gallons per minute except:
   1. Where the shower head has an existing flow rate of less than three gallons per minute as a result of reduced water pressure behind the shower head; or
   2. Where the shower head and shower arm are of a ball joint type which is connected within a wall.

D. All hinged doors exposed to the exterior or to unheated or uncooled areas shall be fully weather stripped or gasketed in a manner which effectively and reliably limits air infiltration.

E. All major cracks, joints, and other openings in building exteriors or portions of a building exposed to unheated or uncooled areas, and all openings from heated or air conditioned spaces into an attic, including but not limited to openings around plumbing vents, pipes, electrical wiring, or furnace flues, shall be caulked or otherwise sealed to limit air infiltration.

(Ord 1843 §1 (part), Ord 1870)

16.60.110 Cost limitations on compliance with energy conservation standards.

In order to comply with the ceiling insulation standards set forth in Subpart A of Section 16.60.100 of this chapter, the owner of residential housing subject to the provisions of this chapter shall be required to install all of the insulation necessary to comply with such standards without regard to the cost of such compliance. However, in order to comply with the remaining energy conservation standards set forth in Section 16.60.100 of this chapter, the owner of residential housing subject to the provisions of this chapter shall not be required to make an expenditure in excess of the following sums during the 18-month period prior to the date the sale, exchange, or other transfer of such residential housing occurs:

A. In the case of residential housing which consists of a detached single-family dwelling unit, the sum of $500.00, including the cost of installing ceiling insulation, if necessary; and

B. In the case of residential housing which consists of two or more multifamily dwelling units, the sum of $350 per dwelling unit, including the cost of installing ceiling insulation, if necessary.

Accordingly, if in complying with all of the remaining energy conservation standards set forth in Section 16.60.100, the owner of residential housing subject to the provisions of this chapter would be required to spend a sum in excess of the amounts set forth in this section, the owner of such housing shall comply with those energy conservation standards set forth in Section 16.60.100, in addition to ceiling insulation, which the owner of the residential housing deems to be cost effective and for which the total cost does not exceed the sums set forth in this section.

(Ord. 1843 §1 (part))

16.60.120 Certification of compliance with energy conservation standards.

The building official shall issue a certificate evidencing that residential housing subject to the provisions of this chapter is in compliance with the energy conservation standards adopted by this chapter if:

A. The building official has inspected such housing and found it to be in compliance with such standards; or

B. A person authorized to make energy conservation inspections in the manner hereinafter provided by this chapter has filed a declaration with the building official, in a form prescribed by the building official, stating that such person has inspected such housing and found it to be in compliance with such standards.

(Ord. 1843 §1 (part))

16.60.130 Energy conservation inspections conducted by building official.

The building official shall conduct inspection of residential housing in order to determine whether such housing is in compliance with the energy conservation standards adopted by this chapter whenever an application for such inspection is filed with the building division by an owner of such housing or such owner's authorized representative. Such application shall be in a form prescribed by the building official and shall be accompanied by an inspection fee in an amount established by resolution of the city council.

If, as a result of such inspection, the building official determines that the residential housing being inspected is in compliance with the energy conservation standards adopted by this chapter, the building official shall promptly issue a certificate evidencing such compliance and cause a copy of such certificate to be served on the owner of such housing or such owner's authorized representative. However, if, as a result of such inspection, the building official determines that the residential housing being inspected is not in compliance with the energy conservation standards adopted by this chapter, the building official shall promptly cause a report to be prepared which identifies, with particularity, all noncomplying conditions and cause a copy of such report to be served on the owner of such housing or such owner's authorized representative.

Any certificate of compliance or inspection report issued or prepared by the building official pursuant to this section shall be deemed to have been served on the owner of residential housing or such owner's authorized representative when a copy of such certificate or report is personally delivered to such owner or representative, or when a copy of such certificate or report is placed in the United States mail, registered and postage prepaid, addressed to such owner or authorized representative at the address appearing on the inspection application.

(Ord. 1843 §1 (part))

16.60.140 Authorization of other persons to conduct energy conservation inspections.

The building official shall authorize other persons to conduct the energy conservation inspections which are necessary in order to certify compliance with the energy conservation standards adopted by this chapter if such person is certified as a building inspector by the International Conference of Building Officials, holds a license as a general contractor or insulation contractor issued by the Contractors' State License Board,

holds a license as a structural pest control operator issued by the Structural Pest Control Board, or is otherwise determined by the building official, on the basis of education and/or experience, to be qualified to conduct such inspections. Applications for such authorization shall be filed with the building division, shall be in a form and contain the information prescribed by the building official, and shall be accompanied by a fee in an amount established by resolution of the council.

If, after authorizing a person to conduct energy conservation inspections necessary in order to certify compliance with the energy conservation standards adopted by this chapter, the building official determines that such person misrepresented such person's qualifications for such authorization, no longer holds the certification or license relied upon by the building official as the basis for granting such authorization, or filed a declaration certifying that such residential housing is in compliance with such energy conservation standards without having inspected such housing or when it is clear that the housing did not comply with such standards, the building official shall revoke the authorization granted to such person. However, the building official shall not revoke an authorization to conduct energy conservation inspections unless the building official has given reasonable prior notice of the building official's proposed action to the person granted such authorization and given to such person an opportunity to appear before the building official and be heard on the proposed revocation.

(Ord. 1843 §1 (part), Ord. 2268)

16.60.150 Transferee's assumption of obligation to correct noncomplying conditions.

When residential housing has been inspected in the manner provided for by this chapter and been found to be not in compliance with the energy conservation standards adopted by this chapter, the owner of such housing, notwithstanding any provisions of this chapter to the contrary, may nevertheless sell, exchange or otherwise transfer the housing without a certification that the housing complies with such energy conservation standards, if prior to such transfer, the transferee enters into an agreement with the city, in a form approved by the city attorney, by which the transferee acknowledges the existence of the noncomplying conditions and agrees to correct same within 180 days following the date such transfer occurs, or such later date as may be approved by the building official for good cause shown.

(Ord. 1843 §1 (part))

16.60.160 Violations.

A violation of the provisions of this chapter shall constitute an infraction which is punishable by a fine in an amount provided for by Section 1505 of the Charter of the City of Chico.

(Ord. 1843 §1 (part), Ord. 2136 §8)

CITY OF CHICO

BUILDING DIVISION

RESIDENTIAL ENERGY CONSERVATION ORDINANCE (RECO)

ENERGY RETROFIT REQUIREMENTS

The following items are required if the sale is not exempt from the ordinance:

A. Ceiling Insulation Minimum = ~~R-19~~ R-30

Exception: (1) Does not apply if the attic headroom is less than thirty (30) inches at the peak of the roof.

B. ADD: Under-floor insulation (minimum R-13).

Exception: Lack of under-floor Clearance

C. Water Heater External Insulation Blankets Minimum = R-6

Exceptions: (1) Internal blanker of R-12
(2) Where the water heater is located less than two (2) inches from an adjacent wall

D. ADD: Insulate hot & cold water lines at water heater (R-3 for 5 feet).

E. Low Flow Restrictors in Showers (Maximum Flow 3 gpm)
Exceptions: (1) Where existing flow is less than three (3) gallons per minute
(2) Where the shower head and shower arm are of a ball type which is connected in the wall

F. ADD: Low-flow sink faucets (2.75 minimum gpm) and/or screw-on aerators.

G. ADD: Low-flow toilets (1.6 gallons/flush).

H. Weather Strip Exterior Doors
ADD: Permanently affixed weather-stripping and door sweeps or door shoes.

Seal all Major Cracks, Joints or Other Openings in a Building Exterior or Portion of a Building Exposed to Unheated or Uncooled Areas

RECOMMENDED ADDITIONAL REQUIREMENTS:

I. Seal duct joints: Add duct insulation to minimum R-4.2.

J. Setback thermostat on all applicable heating and/or cooling systems.

DISCUSSION POINTS:

- HERS Rating of HVAC systems or whole house evaluations … cost limitations?
- Re-inspect at ALL re-sales. Current system: one inspection is good for life of the structure.
- Increase cost limitation (currently $500.00 per CMC Section 16.60.110) or increase amount by a percentage of the sales price.
- What are/should the requirements be for Title companies to not close escrow until the documentation is approved. Currently, there is no way to enforce the requirement and Realtors use the honor system.

ENERGY/RESALE ORDINANCE EXEMPTIONS appear on the reverse side of this page.

ENERGY/RESALE ORDINANCE EXEMPTIONS**

1. **Duplex and single family dwellings constructed on or after June 1, 1983.**
   - **CHANGE DATE TO BUILT PRIOR TO 1990**
2. **Multiple family dwellings (three or more units) constructed on or after June 1, 1984.**
   - **CHANGE DATE TO BUILT PRIOR TO 1991**
3. ~~**Existing housing previously certified as in compliance with City Ordinance No 1480, adopted by Council on October 5, 1982**~~**. Revoke this exception … existing housing must be re-certified at every sale.**
4. **Court-ordered transfers of property.**
5. **Default transfers to a mortgage.**
6. ~~**Sales or transfers from one co-owner to one or more other co-owners**~~**. Revoke this exception**
7. **Sales or transfers to a spouse or to a person or persons in the lineal line of direct family.**
8. **Sales or transfers resulting from a decree or dissolution of marriage or a decree of legal separation.**
9. **Sales to or from any government entity.**

** **For complete exemption criteria, see Chapter 16.60 of the City of Chico Municipal Code.**

July 13, 2009

Linda Herman
City Of Chico
PO Box 3420
Chico, CA. 95927

Dear Ms. Herman,

My name is Gabe Baradat and I represent Johns Manville Insulation Systems. Johns Manville is a leading manufacturer of fiberglass insulation. We produce a complete line of formaldehyde-free insulation at our nearby Willows plant. Many of our Willows employees actually reside in Chico. Recently your office contacted Loerke Insulation of Chico with questions regarding suggested insulation levels in residential attics. As a Johns Manville preferred contractor, Loerke felt that we may be able to help the City of Chico answer your questions regarding insulation.

It is my understanding that the City of Chico may consider raising the minimum level of attic insulation above the current specified value of R-19. We would suggest that any changes to city policy require a minimum of R-38 in order to achieve optimal efficiency. By doubling the R-value you would help to reduce heat transfer in affected attics by approximately 50% and thereby reducing heating and cooling demands. Heating and cooling alone can account for up to 70% of the total energy consumption in a home. It is widely agreed that insulation upgrade is one of the most cost effective means to increase the energy efficiency of a home. The US Department of Energy also suggests R-38 attic insulation based on the climate and geography of the City of Chico.

If we can be of any assistance with technical data or other resources, please don't hesitate to contact us. We are more than happy to answer any questions you may have and support your efforts toward greater energy efficiency.

Sincerely,

Gabe Baradat

Johns Manville Insulation Systems
5512 SagPond Way Sacramento, CA. 95835
Gabriel.baradat@jm.com
916-296-5230

Draft - Revised 7/2009
SUSTAINABILITY GOALS AND INDICATORS

GOAL 1: **Planned and Balanced Growth**. The City will balance growth and conservation by reinforcing the City's compact urban form, establishing urban growth limits, and managing where and how growth and conservation will occur. Orderly development contiguous to existing developed areas that can be efficiently served by the extension of infrastructure and municipal services in a fiscally responsible manner is a priority for Chico.

Indicator #1 - Residential Densities per Land Use Designation - This indicator would measure the residential densities per each land use designation. *Potential Data Sources: City of Chico.*

(New) ***Indicator #2 - Miles of Automobile Lanes - This indicator would measure the miles of lanes for automobiles citywide. Potential Data Sources: City of Chico, Cal Trans, BCAG.***

(New) ***Indicator #3 - Miles of Sewer Lines - This indicator would measure the miles of sewer lines in the city each year. Potential Data Sources: City of Chico.***

GOAL 2: **Healthy Environment with a Reduced Ecological Footprint.** Chico will actively strive to reduce our ecological footprint by using fewer natural resources, relying on locally produced goods and services, actively promoting the use of renewable versus non-renewable resources, and enhancing environmentally friendly strategies to locally assimilate wastes. The City will strive to protect our air quality, climate, and human health by reducing all harmful emissions, including greenhouse gases.

(Revised) Indicator #1 - ***Total*** **Waste Disposed** and Waste Disposed Per Capita: This indicator would measure the **total amount** of waste disposed each year ***and the amount per*** capita per year. *Potential Data Sources: Butte County Landfill, CA Integrated Waste Management Board*

(Revised) Indicator #2 - ***Total Water Used*** and Water Used Per Capita: This indicator would measure the **total** ***amount of water used per year and amount*** per capita per year. *Potential Data Sources: California Water Service.*

Indicator #3 - Safe Drinking Water Compliance: This indicator would measure whether the City's water supply meets the federal and state drinking water health standards. *Potential Data Sources: California Water Service, U.S. EPA.*

Indicator #4 - Air Pollutant Levels: This indicator would measure the changes in the air pollutants, such as ozone, PM 2.5 etc, and/or the number of days Chico was out of compliance with federal and state clean air requirements. *Potential Data Source: Butte County Air Quality Management District, US. EPA.*

(Revised) Indicator #5 - ***Total*** Energy Consumption and ***Energy Used*** Per Capita: This indicator would measure the **total** and per capita electrical and natural gas energy used per year. *Potential Data Source: PG&E.*

(Revised) Indicator #6 - Ratio of Renewable Energy to Total Energy: This indicator would try to estimate the ~~percentage of renewable energy to the total energy used within the region~~ ***amount of renewable energy used/installed per year***. *Potential Data Source: PG&E, CSU Chico, local solar suppliers.*

(New) ***Indicator #7 - Average Square foot of Residential Units - This indicator will measure the number and average square foot of residential housing units built each year***.

(New) ***Indicator #8 - Stream Water Quality/Stormwater Protection - This indicator will track stream and creek water quality tests, such as for turbidity, coliform etc., periodically conducted each year. Potential Data Source: City of Chico, Big Chico Creek Watershed Alliance.***

GOAL 3: **Strong Local Economy with Diversified Employment Base and Reliance on Local Business**. The City will actively promote an appropriate mix of local jobs suited for Chico's residents and local needs, and encourage residents to support the local economy by buying locally produced goods and services to create a more robust local economy.

Indicator #1 - Diverse Economy - This indicator would compare the percentages of wages and jobs by industry sector in Chico to total employment in the U.S. *Potential Data Sources: Center for Economic Development, US Dept. of Labor.*

(Revised) Indicator #2 - Financial Well-being - This indicator will measure ***average wages*** per capita or Median Income growth. *Potential Data Sources: US Dept. of Commerce, Bureau of Economic Analysis.*

Indicator #3 - Gross Receipts Taxes or Small Business Contribution - This indicator could measure the increase in gross receipts and business license taxes or measure the contribution of small businesses to the economy. *Potential Data Sources: City of Chico Business Licenses, U.S. Department of Commerce, Bureau of Census, Statistics of U.S. Businesses.*

(New) ***Indicator #4 - Number of Vendors/Business Licenses for Farmer's Markets. - This indicator will try to measure the number of business licenses/vendors participating in Farmer's Markets.***

(New) ***Indicator #5 - Community Garden Acreage - This indicator will try to measure the number of acres being utilized in the city for community gardens.***

GOAL 4: **Resource Protection and Enhancement**. Chico will conserve, enhance and protect viable agricultural resources, natural resources, and unique natural environments. Historic and cultural resources will be protected and enhanced to serve as significant visible reminders of the City's social and architectural history.

(Revised) Indicator #1 - Water Quantity: This indicator would measure the changes in the groundwater levels ***by measuring well depth***. *Potential Data Sources: Butte County Water Agency, California Water Service, U.S. Geological Survey.*
Indicator #2 - Open Space Ratio: This indicator would determine the ratio of

dedicated open space to total land area in Chico. *Potential Data Sources: City of Chico.*

Indicator #3 - Park Land Per Capita: This indicator would measure and compare the total number of parks and the amount of park acreage per 1000 residents in Chico versus other areas. *Potential Data Sources: City of Chico.*

Indicator #4 - Number of Historical Sites: This indicator would measure the number of nationally registered historical sites in Chico. *Potential Data Sources: City of Chico, National Register of Historic Sites.*

GOAL 5: **Enhance Chico's Character and Identity**. The City will reinforce the unique identity and character of Chico, by promoting Chico as the civic, cultural, and economic hub of the region, while maintaining the City's small town charm. The City also recognizes the role of Downtown as the heart of the community.

Indicator #1 - Vitality of Downtown Economy: This indicator would measure and compare the amount of sales tax derived from the downtown area. Potential Data Source: HDL quarterly sales tax information.

Indicator #2 - Number of Attendees to Downtown Events: This indicator will try to measure the number of people who attend major downtown events, such as Thursday Night Markets, Artisans Faire, etc. *Potential Sources: City of Chico Park Reservations, DCBA.*

Indicator #3 - Community Support of Arts and Cultures: This indicator will try to ascertain the community's and the City's financial support of the arts and cultural activities. *Potential Sources: Art Community, City of Chico Arts Division.*

Indicator #4 - Tourism Rate: This indicator would measure the amount of transient occupancy tax is generated and/or revenues generated from tourism. *Potential Sources: City of Chico Finance, DCBA, Chamber of Commerce, Center for Economic Development.*

GOAL 6: **Livable Neighborhoods as Community Foundation**. The City will strive to create well designed and walkable neighborhood environments, from the traditional downtown core to integrated new communities, with places to gather, nearby services for daily shopping needs, and multi-modal access to recreation, jobs, and other community and regional services.

(Revised) ~~Indicator #1 - Residents located within ½ mile of a Market - This indicator would measure the percentage of residences within ½ mile of a market to determine if they are able to meet their daily needs by walking. *Potential Data Source: City of Chico GIS.* **(See #2 below)**~~

Indicator #1 - Mixed Use Developments - This indicator would measure the number of Mixed Use development projects approved each year. *Potential Data Source: City of Chico Planning Department.*

(New) ***Indicator #2 - Average Distance to a Park or Recreation Area - This indicator***

would measure the average distance from residences to a market, park or recreation area. Potential Data Source: City of Chico GIS.

GOAL 7: **Better Alternatives to Automobile Use**. The City will emphasize development of a balanced, integrated, multi-modal circulation system (streets, trails, sidewalks, bikeways) that is efficient and safe, connecting neighborhoods to jobs, shopping, schools, services, local attractions, and active and passive open space.

Indicator #1 - Miles of bike/pedestrian path: This indicator would determine the ratio of the miles of bike lanes, paths and sidewalks to the total miles of roads in Chico. *Potential Data Sources: City of Chico, BCAG, Cal Trans.*

Indicator #2 - Bus Ridership: This indicator would measure the number and types (i.e. seniors, students etc.) of users riding the Butte Regional Transit System (B-Line) each year. *Potential Data Source: BCAG*

Indicator #3 - Automobiles Ownership & Greenhouse Gas Emissions: This indicator will measure the vehicles owned per capita and the average tons of CO2 emissions as estimated from the local gasoline sales. *Potential Sources: City of Chico Park Reservations, DCBA.*

Indicator #4 - Bike Licenses- This indicator could measure the number of bikes that are licensed and registered with the City each year. *Potential Sources: City of Chico Finance Dept.*

(New) ***Indicator #5 - Vehicle Miles Traveled - This indicator would measure the average miles traveled per vehicle citywide and per capita. Potential Data Sources: City of Chico, BCAG, Cal Trans.***

GOAL 9: ~~Social Services and Systems for All Chico Residents~~ **Community Health and Well-Being .** To create a community that fosters a strong sense of identity, public safety, and the personal well-being of all of Chico's residents. The City will promote community engagement, lifelong learning opportunities and equal access to all community resources. Chico will provide a varied and diverse housing supply to support the needs of Chico's current and future residents.

Indicator #1 - Crime Rates - This indicator will measure the number and types of crime rates in Chico. *Potential Sources: City of Chico Police Department.*

Indicator #2 - Safe Streets - This indicator will measure the rate and types of traffic collisions. *Potential Sources: City of Chico Police Department*

Indicator #3 - On-time High School Graduation and/or Drop Out Rates - This indicator could measure either the percentage of 9th graders who graduate within four years with their cohorts or the high school drop out rates. *Potential Data Source: CUSD, Board of Education.*

Indicator #4 - Standard Proficiency Test Scores - This indicator will compare standard assessment/proficiency scores of students in Chico compared to statewide averages. *Potential Data Source: CUSD, CA Board of Education*

Indicator #5 - Poverty Levels: This indicator will measure the percentage of residents and families who are living at the local, state or federal defined poverty levels. *Potential Data Source: U.S. Census, City of Chico Housing and Neighborhood Services.*

Indicator #6 - Unemployment Levels: This indicator will measure the unemployment rate in Chico, if possible, or Butte County. *Potential Data Source: Bureau of Labor Statistics, Center for Economic Development, Employment Development Dept.*

Indicator #7 - Jobs to Affordable Housing: This indicator will measure the ratio of jobs to housing. *Potential Data Source: City of Chico*

Indicator #8 - Incidences of Abuse: This indicator could measure the number of reported incidences of child, senior, spousal and other abuse. *Potential Data Sources: Child Protective Services, Butte County.*

(New) ***Indicator #9 - Volunteer Hours - This indicator could measure the number of hours donated by volunteers to city parks and other local programs. Potential Data Sources: City of Chico, local charitable organizations.***

(New) ***Indicator #10 - Voter Participation - This indicator would measure public participation by tracking the percentage of registered voters who vote in elections. Potential Data Source: Butte County Clerk/Elections Office.***

(New) ***Indicator #11 - College Enrollment - This indicator would track the number of students in Chico enrolling in university or community colleges after high school. Potential Data Source: Butte Collect, CSUC, CUSD etc.***

(New) ***Indicator #12 - Homeownership/Affordable Housing - This indicator would measure the percentage of home ownership and/or percentage of mortgage payments to total income. Potential Data Source: City of Chico, Housing Authority.***

(New) ***Indicator #13 -Cancer/Heart/Respiratory Deaths - This indicator would measure the number of deaths from cancer, heart disease or respiratory diseases each year. Potential Data Source: Butte County Public Health***