President's Commission on Sustainability

Annual Report Card October 2016

Goals:

- I. Sustainability will be an integral part of the educational experience for all Clemson students.
- II. Clemson's campus will be a model of energy sustainability and operate as a "carbon neutral" campus by 2030.

OUTCOMES FROM INVESTMENTS			
Objectives	Progress	Account- ability	Baseline 2011/2012 (unless otherwise noted)
I. Sustainability will I students.	pe an integral part of the curricular require	ments and	opportunities for all Clemson
1. Offer workshops for faculty in "Teaching Sustainability Across the Disciplines"	2015/2016- NO DATA AT THIS TIME 2012/2013- Did not offer workshop due to limited faculty resources. Strategic Opportunity: 3 of the 4 faculty members who taught this workshop in the past have left CU. Recommendation: Monitor the loss of sustainability-focused faculty members.	Ļ	Approximately 60 faculty members participated in the workshop thus far. Track annually.
2. Increase percentage of discipline-specific courses that include sustainability- related content.	 2015/2016- A search of the 2015-2016 undergraduate course catalog found 48 undergraduate courses that can be classified as related to sustainability. 2013/2014- A search of the 2014-2015 undergraduate course catalog found 30 undergraduate courses that can be classified as related to sustainability. 2012/2013- A search of the 2013-14 undergraduate course catalog revealed 37 courses that can be classified as related to sustainability. 15 courses are 4000 level courses; eight are at the 3000 level, two at the 2000 level and three at the 1000 level. This is 0.7% of the 5,149 undergraduate classes offered at Clemson. A search of the graduate catalog (2012-13) indicated there are 30 courses that can be classified as including sustainability. Three courses are offered at the 600 level and 27 at the 800 level. This is 1.3% of the 2,275 graduate classes offered at Clemson. 	\leftarrow	 0.5% of undergraduate courses and 0.8% of graduate courses A search of the undergraduate catalog (2012-13) revealed 16 courses that can be classified as including sustainability. This is about 0.5% of the 3,010 undergraduate courses offered by Clemson. Six courses are 400 level courses; seven are at the 300 level, two at the 200 level and one at the 100 level. A search of the graduate catalog (2011-12) indicated there are 18 courses that can be classified as including sustainability. This is about 0.8% of the 2,281 courses offered at the graduate level. Four courses are offered at the 600 level and 14 at the 800 level.

	Recommendation: The PCS should develop a list of disciplines which should include sustainability in the coursework because it may not be appropriate in all disciplines. Material on sustainability should be included but not necessarily a separate course.		
3. Increase research projects, including theses and dissertations related to sustainability issues.	2015/2016- A Tiger Prints search concluded in 79 total dissertations and 89 theses. 2012/2013-	\leftrightarrow	Average of 1.5 per year over the 18 years for data collected.
4. Include sustainability as a theme in Science, Technology and Society courses.	2015/2016- As of October 2016, there are 68 courses that meet the STS requirements. Five of those include sustainability explicitly in the course description. This is about 7% of the total. 2012/2013- As of June 2013, there are 68 courses that meet the STS requirements. Four of those include sustainability explicitly in the course description. This is about 6% of the total.	\leftrightarrow	6% of total STS courses include sustainability. As of June 2012, 66 courses met the STS requirements. Four of those include sustainability explicitly in the course description. This was about 6% of the total. Target: Fall 2014 increase by 30%
5. Establish an Institute for Sustainability Education that will help generate financial support to fund sustainability efforts.	As of fall 2016, 128 students have completed CU2010, the foundational course for the Interdisciplinary minor. 2013/2014- CU2010: Sustainability Leadership was offered in spring of 2014. This is the foundation course for the new interdisciplinary sustainability minor and also a CT ² Critical Thinking seminar. The minor is offered through the Institute for Sustainability Education.	1	2012/2013- New Sustainability minor offered through the Institute during the academic year. The Institute is established but there are no indirect cost returns realized as of June 2013.
6. Increase number/percentage of students who report having been exposed to sustainability concepts as part of a course.	2015/2016- Sustainability Survey launched Fall 2016: Nearly 34% of Clemson University respondents in Fall 2016 indicated they had taken a sustainability-related course at Clemson University, while 13.4% % had indicated they were currently enrolled in a STS course. 2013/2014- Student sustainability survey will be launched October 13, 2014.	Ļ	Nearly 44% of Clemson University respondents in 2011 indicated they had taken a sustainability-related course at Clemson University, while only 7.9% indicated they were currently enrolled in an STS course. Target: Fall 2014 increase by 10%

	2012/2013- 30% of students on the survey in 2012 responded that they had taken a sustainability-related course at Clemson University.		
7. Increase the number of Creative Inquiry teams that are appropriately tagged as containing sustainability-focused content.	 2015/2016-There are 25 total Creative Inquiry courses that can be considered related to sustainability. 2013/2014- There are 59 total Creative Inquiry courses that can be considered related to sustainability. 2012/2013- There are 21 Creative Inquiry courses that have sustainability as a key word and 21 others that appear to deal with sustainability issues from their titles. There are currently (June 2013) about 405 CI courses offered. There are about 6% of the CI courses that include sustainability as a keyword and about 5% that can be classified as including sustainability issues. 	↓	 9% of CI courses can be classified as dealing with sustainability. There are 17 Creative Inquiry courses that have sustainability as a key word and 11 others that appear to deal with sustainability issues from their titles. As of June 2012 about 320 CI courses offered. There are about 5% of the CI courses that include sustainability as a keyword and about 9% that can be classified as including sustainability issues. Target: Fall 2014 increase by 20%

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Objectives	Progress	Account- ability	Baseline 2011/2012 (unless otherwise noted)		
	II. Sustainability will be an integral part of the co-curricular requirements and opportunities for all Clemson students, including service and civic engagement.				
1. Establish a baseline of sustainability-focused student organizations that are related to sustainability.	 2015/2016- 12 organizations list sustainability in their mission statements and search words. CUSG has a very active sustainability committee and GSG has established a working group to address sustainability. 2013/2014- 11 organizations list sustainability in their mission statements. 2012/2013- Increased from baseline as of June 2013. 11 organizations list sustainability in their mission statements and search words. 	\leftrightarrow	8 organizations list sustainability in their mission statements and search words.		
2. Increase sustainability- focused civic-engagement opportunities.	2015/2016- NO DATA TO REPORT AT THIS TIME 2012/2013- Established baseline	\leftrightarrow	Established in 2013- 19 civic-engagement community partners address environment/sustainability issues (down from 21).		
3. Increase the number of student organizations and residence halls with an active Eco-rep.	2015/2016- There are approximately 16 active members in the Housing Eco-Rep Program; 9 students in the LEAF Creative Inquiry Team & living in the Living-learning Community.	1	15 active members in the Housing Eco- Rep Program.		

	2013/2014- There are 27 active members in the Housing Eco-Rep Program; 3 students in the LEAF Creative Inquiry Team; 10 students living in the Living-learning Community. 2012/2013- 19 active members in the Housing Eco-Rep Program.		
4. Increase the educational/ recreational usage of the Clemson Experimental Forest.	2015/2016: NO DATA TO REPORT AT THIS TIME Data available spring 2015	\leftrightarrow	 37 Clemson courses utilize the CEF for field work 16 creative inquiry courses are documented Recreational usage on Issaqueena Recreation area: 31% undergrad and grad student 19% faculty staff or family 12% alumni 41% non-related to Clemson Type usage: hikers 25% Mountain bikers 51% horseback rider 7% runners 14% other 3% Estimated total recreational visits over past year: 9,025

Objectives	Progress	Account- ability	Baseline 2011/2012 (unless otherwise noted)	
III. Increase the percentage of students, faculty and staff who demonstrate the knowledge, values and behaviors consistent with Clemson University's commitment to sustainability.				
1. Increase interdisciplinary descriptions in new faculty positions.	2015/2016: NO DATA TO REPORT AT THIS TIME 2012/2013- Surveys are being prepared to determine the interests of both incoming and existing faculty to establish a baseline.	\Leftrightarrow	Analyze data and establish a baseline by June 2015.	

	2015/2016: 2016 Sustainability Survey Results:	
2. Implement and track assessment of student, faculty and staff's knowledge, values and behaviors related to sustainability.	 Students were asked the extent to which they agreed with the following statement "In the development of our society, we must strive to meet the needs of the present without compromising the ability of future generations to meet their own needs." (92.4%) strongly or mildly agree with this statement about sustainability, with just 2.9% mildly or strongly disagreeing with this statement; 4.7% were neutral about this question. Addition survey results indicated that: 85.5% of respondents strongly or mildly agreed that they felt a moral obligation to protect the environment 59.5% strongly or mildly agreed that "we are approaching the limit of the number of people that the earth can support" 54.5% of students strongly or mildly disagreed with this statement, "our present rate of consumption can be maintained with no ecological problems." 24.1% strongly or mildly agreed, while an additional 21.4% indicated they felt neutral about this statement Nearly 92% of students indicated that they strongly or mildly agreed that they strongly or mildly agreed that it was important for Clemson University to take a leadership role in sustainability and the environment 55.5% of students indicated strong or mild levels of agreement that they would "take sustainability courses if they were offered in my area of academic interest" 83.6% indicated they strongly or mildly agreed that they would "be willing to reduce my consumption to protect the environment" October 13-November 3, 2014 biannual sustainability survey will be launched. Between October 1-12, 2012, 673 students, faculty, and staff took the survey. (91%) strongly or mildly agree with this statement. Additional survey results indicated that: 72.96% of respondents strongly or mildly agreed that they felt a moral obligation to protect the environment 	 Students were asked the extent to which they agreed with the following statement "In the development of our society, we must strive to meet the needs of the present without compromising the ability of future generations to meet their own needs." (93.0%) strongly or mildly agree with this statement about sustainability, with just 4.9% mildly or strongly disagreeing with this statement. Addition survey results indicated that: 77.7% of respondents strongly or mildly agreed that they felt a moral obligation to protect the environment 52.2% strongly or mildly agreed that "we are approaching the limit of the number of people that the earth can support" 76.4% of students strongly or mildly disagreed with this statement, "our present rate of consumption can be maintained with no ecological problems." 12.4% strongly or mildly agreed that it was important for Clemson University to take a leadership role in sustainability and the environment 62.2% of students indicated strong or mild evels of agreement that they would "take sustainability courses if they were offered in my area of academic interest" 85.5% indicated they strongly or mildly dis greed that they strongly or mildly agreed that they would "take sustainability courses if they were offered in my area of academic interest"

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	approaching the limit of the number of	
	people that the earth can support"	
•	 60.28% of students strongly or mildly 	
	disagreed with this statement, "our present	
	rate of consumption can be maintained with	
	no ecological problems." 9.81% strongly or	
	mildly agreed, while an additional 16.34%	
	indicated they felt neutral about this	
	statement	
	 Nearly 89% of students indicated that they store plus or pildly approad that it was 	
	strongly or mildly agreed that it was	
	important for Clemson University to take a	
	leadership role in sustainability and the	
	environment	
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	levels of agreement that they would "take	
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	my area of academic interest"	
	agreed that they would "be willing to	
	reduce my consumption to protect the	
	environment"	
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3. Increase bike riders and pedestrian traffic while reducing automobile traffic in the interior of campus.	 2015/2016- Parking and Transportation's upcoming bike share program will start in the Fall and have 25 bikes and 5 stations around campus to encourage students to bike instead of use their vehicles. 2012/2013- June 2012: Administrative Council approved a new Bikeways Master Plan aimed at both recreational and commuting cyclists. Clemson is only 1 of 58 institutions of higher education to being recognized as a bronze-level Bike Friendly University in April, 2013. 	1	We are moving towards getting initiatives in place to measure bike, pedestrian and automobiles on campus.
4. Increase number of students in the LEAF CI class or 3 credit course by 30%.	 2015/2016- The class enrolled 9 students in the Spring 2015 2013/2014- The class enrolled 3 students in the Spring 2014 semester. 2012/2013- The class enrolled 10 students in the Spring 2013 semester, a 43% increase. 	→	The class enrolled 7 students in the 2011/2012 academic year.
5. Increase number of students who opt-in to the Student Sustainability Initiative Fund.	2015/2016- NO DATA TO REPORT AT THIS TIME \$2,424.25 was raised by cap and gown sales from Fall 13/Spring 14. \$3,600 was raised by the fund last year, and \$4,950 by just this Fall. The account now has just under \$11,000. Baseline established 2013/2014	1	2013/2014- 312 students opted-in to the Student Sustainability Initiative Fund for Fall 2014, amounting to \$3,120. 2012/2013- Fund was approved and the optional \$10 fee will appear on bill for Fall 2013.
6. Increase the number of students who buy the <i>GreenWeaver</i> graduation cap and gown.	2015/2016- NO DATA TO REPORT AT THIS TIME 2013/2014- 100% of students of the Class of 2014 bought the <i>GreenWeaver</i> gown. 2012/2013- Baseline established.	1	2012/2013- 85% of students (1, 852) of the Class of 2013 bought the <i>GreenWeaver</i> gown. Saved 42,500 plastic bottles from the landfill.

7. Increase funding to the student sustainability initiative each year.	2015/2016- NO DATA TO REPORT AT THIS TIME 2013/2014- Baseline established.		2013/2014- \$2,425.25 was donated from a portion of the sales of the <i>GreenWeaver</i> cap and gown, and \$3,120 was donated through the SSI opt-in fee, for a total of \$5,545.25.
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Objectives	Progress	Account- ability	Baseline 2011/2012 (unless otherwise noted)
	nd outreach efforts in sustainability ed and beyond as well as Clemson alumn		
1. PSA staff will provide sustainability education opportunities throughout the state.	2015/2016- NO DATA TO REPORT AT THIS TIME 2012/2013- Maintained baseline (27 programs).	\leftrightarrow	The Extension team (faculty & agents) offer 27 programs throughout the state.
2. Foster dialogue on sustainability issues for the campus community.	 2015/2016- The Sustainability Café held one session each semester with an average of 45 participants per semester. 2013/2014- The Sustainability Café held 3 sessions during the spring 2014 semester with an average of 35 participants per session. A CI team worked to provide sustainable food options for the sessions. 2012/2013- The Sustainability Café held 8 sessions during the spring 2013 semester and had on average 10-20 participants. 	\leftrightarrow	3 Sustainability Cafes in 2011 Funding was received from the Clemson Advancement Foundation (CAF) to hold the events. This is a collaborative effort between Healthy Campus, Landscape Architecture, Architecture and the President's Commission on Sustainability. In the fall 2012 semester, the Cafe also served as a research project for a graduate level communications studies class that did a qualitative research project on the cafe to evaluate ways to make the Cafe more effective.

	2015/2016- CEF recertified by Sustainable Forest Initiative (SFI) in August 2016 for three year period (2016-2019)		The Clemson Experimental Forest has
3. Achieve Sustainable Forestry Initiative (SFI) certification for the Clemson Experimental Forest (CEF).	2013/2014- The CEF received certification from the SFI as sustainable in the fall of 2013. 2012/2013- We elected to participate with the SFI Forest Partners South Carolina Project to obtain a third party for certification. Bureau Veritas (BV) conducted the audit in June 2013. We will need to modify and improve some office documentation procedures. There were no problems with the field audit.	1	participated in the SFI program as a Licensee (no 3 rd party audit) since 2000. The third party certification procedure should be complete before the end of 2013 and the Clemson Experimental Forest will be certified under the Sustainable Forestry Initiative. The forest management operations and plan will continue to be certified by the SFI program in the future.
Objectives	Progress	Account- ability	Baseline 2011/2012 (unless otherwise noted)
V. Clemson's campus wil by 2030	l be a model of energy sustainability ar	nd operate	as a "carbon neutral" campus
	Tracked annually in September. Fiscal Yr: 2015 Gross Sq-Ft: 6,520,799 Consumption(kBTU): 928,350,491 FY 2015 Main Campus Energy Intensity (kBTU/Sq-Ft): 142 That will be 7% below 2000 baseline of 153.5 kBTU/Sq-ft	ſ	Success Goal Measure 20% below 2000 baseline by 2020: 123 kBTU/Sq-Ft. FY 2014 Energy Intensity (kBTU/Sq-Ft): 145 Average Energy Intensity (kBTU/Sq-ft) 2009-2014: 143.75
1. Reduce total energy consumption by 20% by 2020 relative to the fiscal year 2000 baseline.	Fiscal Yr: 2013 Gross Sq-Ft: 6,525,799 Consumption(kBTU): 990,783,020 Goal Success Measure Energy Intensity (kBTU/Sq-Ft): 151.83 Average Energy Intesnsity (kBTU/Sq-ft) 2009- 2013: 145.61 Upgrades to the east chiller plant were completed in FY13 April. These upgrades will improve operational efficiency 35% and increase chilled water production by 12%, for an estimated \$430,000 annual energy savings.		Baseline Fiscal Yr: 2000 Gross Sq-Ft: 6,217,114 Consumption (kBTU): 954,423,312 Goal Success Measure Energy Intensity (kBTU/Sq-Ft): 153.52 GOAL: 20% by 2020: 123 Average Energy Intensity (kBTU/Sq-ft) 2004-2008: 157.46
	Fiscal Yr: 2012 Gross Sq-Ft: 6,349,281 Consumption (kBTU): 891,226,382		

	Goal Success Measure Energy Intensity (kBTU/Sq-Ft): 137.87		
	 2015/2016- Upgrades to Central Energy Facility Steam Plant Installed high efficiency packaged Miura natural gas steam boilers. Coal boiler is decommissioned - Replacement gas fired boilers and silo demolition will be completed in 2017 	1	Steam Boiler Plant Annual Operating Efficiency: 82% compare to 74% of
2. Remove coal-fired boilers on campus from service.	2013/2014- - \$950,000 in central energy facility boiler improvements to begin replacing coal boiler capacity and enhance system reliability project is in progress and scheduled for completion summer 2014. -Submission of a coal boiler replacement capital project request will proceed for construction in the summer 2015		boiler efficiency for coal boiler. Savings per year ~ \$213,960 Project timeline for coal boiler replacement 2014-2015.
	2012/2013- Bio-mass study was completed in September 2012 – Evaluating project alternatives and cost.		
3. Implement real-time energy management.	 2015/2016- Completed implementation of Central Chilled Water System efficiency optimization program CPO30 OptiCX platform. 2012/2013- Implementing energy dashboards for 28 campus buildings. Developing occupancy based energy control strategy for campus buildings. 	1	This will be an ongoing process. Current efficiency has increased to 0.665kW/ton from previous 0.76kW/ton. Estimated annual cost savings from this operating system upgrade is \$200,000 with a 2 year payback. Pilot programs in 2 buildings.
4. Construction of West Chiller Plant	2015/2016- Completed construction of high efficiency 3000 ton West Energy chiller plant.		This new chiller plant is 15% more energy efficient than the Central chiller plant equipment it is slated to replace.
5. Conduct investment grade energy audits of existing buildings for implementation of cost effective improvements.	 2015/2016- Implemented recommended energy conservation saving measures in BRC, Jordan Hall and Godley Snell. LED upgrade and improve lighting for Fike Recreation Center. Retro-commissioning teams have been developed and completed 100% commissioning on the Watt Family Innovation Center. 2012/2013- Completing energy conservation measures 	1	Implement Energy Conservation Measures using cost benefit analysis for project funding in a target group of existing campus buildings and facilities to achieve an average 2% per year energy reduction over fiscal year 2000 baseline.

	 and corrective actions in three major buildings Completed investment grade energy audits 		
	 Completed investment grade energy audits in 6 buildings and retro commissioning in 3 buildings. 		
	Parking and Transportation Services provides a full portfolio of Travel Demand Management (TDM) Programs that continues to grow. In addition to the programs with data listed below, PATS provides airport shuttles during holiday breaks, and provides safe rides at night.		
	2015/2016-		
	Tiger Transit Service a) Tiger Transit ridership decreased 3.2% from 92,422 in 2014/15 to 89,450 in 2015/2016.		
	CATBus Ridership a) Red Route Ridership increased 3.88% from 2014/2015 to 2015/2016.		
	Clemson Carpool 2015-2016 a) Fall Groups: 98 Fall Members: 228 b) Spring Groups: 85 Spring Members: 190 c) Total Groups: 183 Total Members: 418 This is a 10% increase from last year.	\leftrightarrow	As of 2011, the campus was at 89.6% utilization for the primary parking groups (employees, commuter students, and resident students). We need to
6. Implement a Travel Demand Program (TDM).	LEV Program a) Active LEV Permits: 255. % Growth from 2014/2015: 14.86%		drive this number down through TDM programs. Baseline Expansion:
	2013/2014- Tiger Transit Service a) Tiger Transit ridership decreased 12.5% from 115,222 in 2012/13 to 100,764 Clemson Carpool		Expanded carpool permit program from 67 participants in 32 carpools in Fall 2009 to 204 participants in 90 carpools in Fall 2012.
	a) Fall Groups: 106 Fall Members: 220 b) Spring Groups: 85 Spring Members: 185 c) Total Groups: 191 Total Members: 405 This is a 7.9% increase from last year. LEV Program		
	a) Active LEV Permits: 220. % Growth from 2013: 34.15%		
	2012/2013- Collecting current parking and transit utilization figures to determine service needs, improve operational efficiencies, and provide baseline for measurement of impact of TDM programs.		
	Broadening campus TDM portfolio with addition of Low Emission Vehicle permit program, continued support of Clemson Area Transit, and expanded Tiger Transit services.		
	Tiger Transit Service		

	 In August of 2015, Parking and Transportation Services switched car share vendors to Zipcar from Enterprise (WeCar). This move was made as a result of Enterprise's contract expiring, and was the result of an RFP process. 2015/2016 Zipcar (Numbers reported as of April 30, 2016) a) Total Memberships: 354 b) Reservations: 1,671 c) Reservations per Active Member: 2.09 d) % Members that made a reservation: 36% e) New reporting statistics from Zipcar as opposed to WeCar 	\leftrightarrow	
7. Increase carsharing participation.	 2014/2015 WeCar (Numbers reported as of April 30,2015) a) Total Members: 448 9.8% growth from 2014 b) Total miles: 120,108 8.67% decrease from 2013/2014 c) Average Utilization Rate: 30.38%, 2.63% increase from 2013/2014 d) Max Utilization: 44.96% 2013/2014- WeCar (Numbers reported as of April 30, 2014) a) Total Memberships: 408 members 30.9% Growth from 2013 b) Total miles: 131,510 miles (April '13 – April 14); 15.8% growth c) Average Utilization Rate: 29.6% 6.2% decrease from 2013 e) Max Utilization: 43.52% 		Enhanced and expanded existing carpool program through addition of shared-vehicle program (WeCar) and ride-matching software (Zimride). Launch of WeCar shared vehicle program has resulted in 278 rentals totaling 1,905 rental hours and over 21,000 miles driven. According to Zimride staff, the Clemson University launch of this ride-matching software has reduced vehicle miles traveled by 160,748 saving over 6,303 gallons of gas & over 122,000lbs of CO ₂ .
	 2012/2013- WeCar (Numbers reported as of April 30, 2013) a) WeCar is changing its name to Enterprise Carsharing b) Total Memberships: 329 members; 95% growth from 2012 c) Total miles: 113,456 miles (April '12 – April 13); 171% increase d) Average Utilization Rate: 33.29% 24.8% Increase from 2012 e) Max Utilization: 60.19% f) New WeCar available at CU-ICAR facility PATS transitioned to a new Ride Sharing Service – RidePost, in April 2013. The transition occurred to facilitate the accurate reporting of usage and completed rides coupled with the ability to determine the number of cars reduced to campus for a given commute. 		

8. Determine best alternative energy sources.	2014/2015- Finalizing a master solar energy plan to develop a working plan for solar PV installations on University properties as part of Duke Energy and SCE&G incentives under the SC's Distributed Energy Program.	\leftrightarrow	2020 timeline for 20% campus renewable energy.
	2012/2013- Evaluating and developing proposed campus solar energy master plan.		