**Sinclair Community College**

**Continuous Improvement Annual Update 2012-13**

**Please submit to your dean and the Provost’s Office no later than Oct. 1, 2012**

**Department:** 0551 - Engineering Technical Design / 0552 – Heating, Air Cond, & Refrig

Year of Last Program Review: FY 2008-2009

Year of Next Program Review: FY 2015-2016

**Section I: Department Trend Data, Interpretation, and Analysis**

**Degree and Certificate Completion Trend Data – OVERALL SUMMARY**

Please provide an interpretation and analysis of the Degree and Certificate Completion Trend Data (Raw Data is located in Appendix A*): i.e. What trends do you see in the above data? Are there internal or external factors that account for these trends? What are the implications for the department? What actions have the department taken that have influenced these trends? What strategies will the department implement as a result of this data?*

The trend date for the MET program shows a positive reversal in the completion rate. Combining and restructuring the curriculum has streamlined the curriculum aiding this reversal. It is expected the trend data will continue to show increased completion rate in the 11-12 academic year.

Completion rates for HVAC are holding constant. There will be a drop in completion rates for the 12-13 academic year. This is because we encouraged completion prior to semester transition. There are currently only four students in the HVAC 2-yr pipeline and they will not be ready to graduate. The certificate completion rate is also holding constant and is expected to do so for the foreseeable future.

Current enrollment in both programs has increased dramatically for first year students but actually declined for second year students. This is the reason for an expected drop in completion rates for year 11-12 but an increase in 12-13 and beyond.

**Course Success Trend Data – OVERALL SUMMARY**

Please provide an interpretation and analysis of the Course Success Trend Data (Raw Data is located in Appendix A). Looking at the success rate data provided in the Appendix for each course, please discuss trends for high enrollment courses, courses used extensively by other departments, and courses where there have been substantial changes in success.

Departmental success rates for MET has remained fairly constant and are above divisional and collegewide averages. We attribute this to improved tutorial services and faculty engagement with their student body.

The HVAC success rate has also remained constant for many of the same reasons. The HVAC program aslo uses many guest speakers from industry and require student involvement in professional societies. This seems to pique the students interest and desire to succeed in this program

Within both programs, we are seeing more self-developed cohorts. This allows a group of students have an effective support network contributing directly to student success.

Please provide any additional data and analysis that illustrates what is going on in the department (examples might include accreditation data, program data, benchmark data from national exams, course sequence completion, retention, demographic data, data on placement of graduates, graduate survey data, etc.)

Both programs received full accreditation from TAC/ABET in the Fall of 2011. Data continues to be collected in support of this accreditation. The next comprehensive ABET review will occur in 2016-17.

The department also perform exit interviews of all graduates during their capstone experience. Comments from these exit interviews are passed along to all faculty, discussed amongst program faculty, and corrective action applied as deemed necessary.

**Section II: Progress Since the Most Recent Review**

Below are the goals from Section IV part E of your last Program Review Self-Study. Describe progress or changes made toward meeting each goal over the last year.

|  |  |  |
| --- | --- | --- |
| **GOALS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| NEED TO BE DEVELOPED. Self-study simply notes that “Comments made in sections a through d above describe the department’s direction in curriculum and course delivery and innovative applied learning techniques”.  | In progress [ ] Completed [x] No longer applicable [ ]  | Both the MET and HVACR programs investigate and use various techniques to improve student learning based upon goals provided by the industry we serve as delivered by our advisory committess.For example, the guitar class provides a serious look into product lifecycle management using a vehicle students find fun and attractive. This has been so successful that we use it as a recruiting tool in area high schools.Additionally, our MET capstone project over the last three years involved the design and construction of the SAE baja buggy. This project included heavy industry involvement, hands‑on activity components, and applied learning.Similary, the Integrated Capstone for the HVAC program (which involved working with Archtectural, Civil, Construction Management, and Environmental) has provided students with a near 'real life' experience replete with proper design process, discussions with industry engineers and sales persons, and interpersonal issues that require solution so as to get the job done.The HVAC program has also been well supported by industry. Local business has donated thens of thousands of dollars in money and equipment to improve our education in HVAC controls and systems. This has included $25,000 worth of control products, $5,000 from ASHRAE to aid in the construction of a HW/CW system on which we will be able to train, and a new geothermal heat pump unit.Also, local HVAC industry professionals visit our second year classes to make presentations to our students on current technologies relevant to the profession. We currently have six persons providing such activities in four separate (quarter) courses. Such discussions serve to reinforce to the student all the material they've been learning in the classroom.Our HVAC students are all student members of ASHRAE. As such, they make at least two visits to a local chapter student nights each year. These visits are a required activity that is part of the second year curriculum. These visits result in our students gaining exposure to local industry professionals often resulting in an offer for a job interview. |

Below are the Recommendations for Action made by the review team. Describe the progress or changes made toward meeting each recommendation over the last year.

|  |  |  |
| --- | --- | --- |
| **RECOMMENDATIONS** | **Status** | **Progress or Rationale for No Longer Applicable** |
| As the HVAC program has additional capacity, and there is a need for additional workers in the industry at a time when individuals in the community are seeking retraining, the department should explore creative means to market the degree and certificate programs to a variety of audiences. These could include e-marketing, a focus on green technologies, etc. In the marketing of this program, consideration should be given to differentiating Sinclair’s HVAC program in the public’s perception from programs offered at other institutions. | In progress [x] Completed [ ] No longer applicable [ ]  | This is a great idea and one that has worked in the past. Program marketing was ensuring there was a public knowledge of this program. It also seemed to increase enrollment. When marketing of individual programs ceased, the HVAC program fell out of public awareness making it difficult to attract new students.We do have program awareness with individual vocational programs such as MVCTC, Springfield-Clark JVS, and UVJVS. However, the number of students matriculating from these programs to SCC is minimal.There are at least eight programs in the region viewed as being competitive to our progreams: MVCTC high school and Adult, UVJVS HS and Adult, Clark-Springfield HS and Adult, Kaplan College, and Warren County. Although no single program is truly competitive with our two-year program (all are residential while ours is commercial), the difference is not understood by the public. Until we are allowed to aggressively advertise our program, advertise the difference with competing programs, and feature the high degree of success and the lucrative salaries most of our graduates achieve, this will continue to be a problem.  |
| While learning experiences designed to facilitate the achievement of general education outcomes as well as program outcomes appear to be in place, there is no documented evidence that those outcomes are being met. Support is available through the College-Wide Assessment Committee to design methods for collecting, analyzing, and documenting these outcomes. | In progress [ ] Completed [x] No longer applicable [ ]  | Although such evidence is collected throughout the program, the primary point of assessment occurs during capstone. Students are required to provide a number of written documents, presentations, and a final design. These documents are presented to the advisory members for comment and graded/assessed by capstone faculty. Shortcomings are documented under our capstone project 'Lessons Learned' list with improvements enacted over the following year where appropriate. |
| The department should consider the value of and need for the AAS degree in MET, given the current emphasis on the four year technical degree. Students with interest in mechanical engineering might be better served by the Engineering Science University Parallel degree.  | In progress [ ] Completed [ ] No longer applicable [x]  | The MET program is one of the three most highly recognizable and one of the most popular engineering technology programs that can exist at any school nationally. Elimination of this program would be quite quite hurtful to the local community. This program does feed many of the area four-year engineering technology programs including University of Dayton and Miami University.As the name implies, the Engineering Science University Parallel program serves a completely different audience than the MET program. ESUP is a pre‑engineering degree that transfers to any school with a four‑year Engineering Science curriculum such as Wright State and the University of Dayton. (Please note that UD has both Engineering Science and Engineering Technology programs)  |
| The department is encouraged to confer with the Mathematics Department to explore means of improving student success. The formation of learning communities between math and early program courses might be an effective strategy. | In progress [x] Completed [ ] No longer applicable [ ]  | The newly developed MET 1111 class is mathematics for engineering technology students to prepare them for critical thinking, analytical reasoning, and problem solving. The course is modeled after one used by Wright State with a high degree of success. This course is currenlty applicable only to MET students at this time. The intent is to expand to all ABET programs once this pilot is complete.Met with math to coordinate the Math/Physics sequence to ensure successful degree completion under semesters.  |
| Examine degree and certificate completion rates for the department’s programs and identify factors that contribute to low completion rates. Determine whether low productivity programs should be revised in order to attract and graduate more students or whether selected offerings should be discontinued. | In progress [ ] Completed [x] No longer applicable [ ]  | Trend data indicates increased completion rates. Our efforts have been successful and we will continue those efforts. |

**Section III: Assessment of General Education & Degree Program Outcomes**

The Program Outcomes for the degrees are listed below. **All program outcomes must be assessed at least once during the 5 year Program Review cycle, and assessment of program outcomes must occur each year**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **General Education Outcomes** | To which degree(s) is this program outcome related? | Year assessed or to be assessed. | Assessment MethodsUsed | What were the assessment results? (Please provide brief summary data) |
| Oral Communication | All programs | **2011-2012** | Assessment of Capstone. | Group and individual PowerPoint presentations. |
| Written Communication | All programs | **2011-2012** | Assessment of Capstone. | Group and individual papers, reports, and project binders. |
| Critical Thinking/Problem Solving | All programs | **2012-2013** |  |  |
| Values/Citizenship/Community | All programs | **2013-2014** |  |  |
| Computer Literacy | All programs | **2014-2015** |  |  |
| Information Literacy | All programs | **2015-2016** |  |  |
|  |  |  |  |  |
| **Program Outcomes** | To which course(s) is this program outcome related? | Year assessed or to be assessed. | Assessment MethodsUsed | What were the assessment results? (Please provide brief summary data) |
| Communicate effectively in a technical environment, including written and oral communication, effective listening and technical presentation. | SCC 1101, ENG 1101, COM 2211, MET 1131, CAT 1111, CAT 1131 | 2012-13 |       |       |
| Apply principles of environmental safety and health to HVACR system operation, maintenance, troubleshooting and design. | HVA 1201, HVA 2251, HVA 2301 | 2013-14 |       |       |
| Apply principles of mathematics, physics, chemistry, thermodynamics, psychrometrics and fluid mechanics to HVACR systems. | MAT 1280, MAT 1290, PHY 1131, HVA 1301, HVA 1351, EET 1120 | 2012-13 |       |       |
| Demonstrate an in-depth understanding of the troubleshooting, commissioning, design and documentation processes for commercial HVACR systems and subsystems via the application of industry accepted techniques, methods, and tools including but not limited to handbooks, manuals, codes and software. | EET 1139, HVA 2201, HVA 1451, HVA 2780, HVACR elective, HVACR elective  | 2014-15 |       |       |
| Recognize professional, ethical and societal responsibilities, respect diversity and commit to life-long learning. | MET 2711, OTM Social/Behavioral, OTM Arts/Humanities  | 2015-16 |       |       |
| Apply basic science and fundamental engineering studies to identify, analyze and integrate solutions to emerging issues in environmental engineering technology including sustainability. | OTM (Social/Behavioral), EGV 2781, EGV 2701, MAT 1310, MAT 1410, MET 1161, PHY 1141, CHE 1211, CHE 1251, CHE 1221, CHE 1261, MET 2201, CAT 2421, MET 2301 | 2013-14 |       |       |
| Respect the ethical responsibility of public institutions and private organizations to society pertaining to environmental engineering technology. | HUM 1135, MET 2711 | 2014-15 |       |       |
| Demonstrate knowledge and skills to assess and initiate response to hazardous exposures, minimizing their risk and the risk to surrounding populations, immediate property and the environment. | FST 1555 | 2012-13 |       |       |
| Follow and apply protocols for environmental site assessments. Detect the conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum, petroleum products and controlled substances by records review or field sampling. Identify potential environmental liabilities associated with properties considered for transfer. | EGV 1501, CAT 1501, CAT 2501 | 2013-14 |       |       |
| Apply principles of system design, management and operation of water supply/treatment, including skills and knowledge to sample and interpret contamination distribution in surface water and ground water. | EGV 1551, EGV 2551 | 2015-16 |       |       |
| Apply principles of system design, management and operation of waste treatment and disposal, including skills and knowledge to identify, analyze and process hazardous substances and wastes | EGV 2501 | 2015-16 |       |       |
| Apply knowledge of environmental laws to support compliance with current and future local, state and federal requirements. | EGV 1501, EGV 2501, EGV 1551, FST 1555 | 2014-15 |       |       |
| As an interdisciplinary team member, develop products, processes, solve problems, perform project planning, prepare time estimates and make sound, ethical decisions. | MAN 2110, MET 124 | 2012-13 |       |       |
| Design in detail individual parts from functional sketches provided by an engineer, and model them using a three-dimensional parametric modeler. (i.e. 3-D CAD) | MET 1301, MET 2101, MET 2151, MET 2201, MET 2251, MET 2780 | 2014-15 |       |       |
| Use mathematical and scientific skills to analyze product properties including form, function, fit, strength, thermal, fluid, etc. | MAT 1310, MAT 1410, PHY 1141, MET 1111, MET 1161, MET 2301, MET 2351, MET 2401 | 2012-13 |       |       |
| Use solid model data as input to drive rapid prototyping or N/C machining equipment. | CAM 1109, MET 1281 | 2013-14 |       |       |
| Document the product/process model using appropriate means (multi-view drawings, pictorials, catalog/manual illustrations, charts/graphs, shaded image, animation, etc.) | MET 1201, MET 1301, MET elective | 2015-16 |       |       |

**General Education Outcomes**

1. Are changes planned as a result of the assessment of general education outcomes? If so, what are those changes?

No. We feel the assessment of our students illustrates proper education in this area.

1. How will you determine whether those changes had an impact?

**Program Outcomes**

1. Are changes planned as a result of the assessment of program outcomes? If so, what are those changes?

No

1. How will you determine whether those changes had an impact?

**Improvement Efforts**

1. What were the results of changes that were planned in the last Annual Update? Are further changes needed based on these results?

Due to the semester conversion, any changes planned were not accomplished until the development of the semester version of these courses. The major changes include the MET 1111 Preparatory Math Course mentioned above as well as a refocusing of the Environmental program away from Air Pollution to Sustainability issues. This later was at the request of the advisory committee.

1. Are there any other improvement efforts that have not been discussed in this Annual Update submission?

A very recent improvement is the construction of a chilled water/hot water system using equipment grant money from ASHRAE. This will significantly improve the capstone experience for our HVAC students by allowing them to participate in a commissioning exercise rather than a design exercise. Although the later was a fine capstone, the former will much better prepare our students for the types of jobs they will acquire upon graduation.

**APPENDIX – PROGRAM COMPLETION AND SUCCESS RATE DATA**

**Degree and Certificate Completion**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Department | Department Name | Program | FY 07-08 | FY 08-09 | FY 09-10 | FY 10-11 |
| 0551 | Engineering Technical Design | DD.STC | 4 | 4 | 6 | 7 |
| 0551 | Engineering Technical Design | DRT.AAS | . | 1 | 1 | . |
| 0551 | Engineering Technical Design | EMT.AAS | 14 | 7 | 3 | . |
| 0551 | Engineering Technical Design | ETD.AAS | 2 | . | 2 | 5 |
| 0551 | Engineering Technical Design | EVT.AAS | 4 | 5 | 4 | 6 |
| 0551 | Engineering Technical Design | IDGT.AAS | 5 | 2 | . | . |
| 0551 | Engineering Technical Design | MEGT.AAS | . | 5 | 6 | 8 |
| 0551 | Engineering Technical Design | METMM.STC | 1 | 1 | . | . |
| 0552 | Heating, Air Cond, & Refrig | FCMG.STC | 1 | 1 | . | . |
| 0552 | Heating, Air Cond, & Refrig | HACO.AAS | 2 | 1 | 1 | . |
| 0552 | Heating, Air Cond, & Refrig | HVAAS.STC | . | 3 | 2 | . |
| 0552 | Heating, Air Cond, & Refrig | HVACR.AAS | 1 | 1 | 5 | 5 |
| 0552 | Heating, Air Cond, & Refrig | LCHS.STC | 13 | 10 | 19 | 22 |
| 0552 | Heating, Air Cond, & Refrig | SHAS.STC | . | 12 | . | . |

**Course Success Rates**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Department | Department Name | Course | FY 07-08 | FY 08-09 | FY 09-10 | FY 10-11 | FY 11-12 (excludes Spring) |
| 551 | Engineering Technical Design | ETD-101 | 74.4% | 72.8% | 61.7% | 73.5% | 54.4% |
| 551 | Engineering Technical Design | ETD-102 | 75.0% | 80.0% | 71.4% | 56.5% | 70.0% |
| 551 | Engineering Technical Design | ETD-110 | 85.7% | 90.0% | 92.5% | 95.0% | 100.0% |
| 551 | Engineering Technical Design | ETD-118 | 75.0% | 73.5% | 79.1% | 68.8% | 100.0% |
| 551 | Engineering Technical Design | ETD-121 | 69.7% | 81.6% | 80.9% | 64.4% | 63.4% |
| 551 | Engineering Technical Design | ETD-128 | 73.9% | 72.3% | 75.2% | 68.9% | 75.4% |
| 551 | Engineering Technical Design | ETD-132 | . | . | 75.0% | 82.4% | 85.7% |
| 551 | Engineering Technical Design | ETD-133 | . | . | . | 90.9% | 83.3% |
| 551 | Engineering Technical Design | ETD-150 | . | 69.2% | 88.0% | 92.9% | 61.9% |
| 551 | Engineering Technical Design | ETD-155 | . | 71.4% | 72.7% | 78.6% | 83.3% |
| 551 | Engineering Technical Design | ETD-198 | 77.6% | 73.7% | 73.2% | 70.9% | 66.6% |
| 551 | Engineering Technical Design | ETD-199 | 74.2% | 77.9% | 79.9% | 77.7% | 68.7% |
| 551 | Engineering Technical Design | ETD-211 | 84.6% | 70.3% | 77.4% | 74.4% | 63.3% |
| 551 | Engineering Technical Design | ETD-212 | 72.0% | 78.8% | 77.8% | 90.0% | 86.7% |
| 551 | Engineering Technical Design | ETD-213 | 65.4% | 62.1% | 48.8% | 65.2% | 44.6% |
| 551 | Engineering Technical Design | ETD-214 | 86.4% | 100.0% | 86.7% | 100.0% | . |
| 551 | Engineering Technical Design | ETD-222 | 60.9% | 63.4% | 50.9% | 96.3% | 95.8% |
| 551 | Engineering Technical Design | ETD-228 | 100.0% | 100.0% | 91.7% | . | . |
| 551 | Engineering Technical Design | ETD-230 | 77.0% | 66.7% | 76.9% | 90.0% | 75.0% |
| 551 | Engineering Technical Design | ETD-231 | 90.0% | . | . | . | . |
| 551 | Engineering Technical Design | ETD-238 | . | 90.0% | 90.0% | 90.0% | 95.5% |
| 551 | Engineering Technical Design | ETD-245 | 54.5% | 66.7% | 88.9% | 100.0% | . |
| 551 | Engineering Technical Design | ETD-251 | . | 100.0% | 100.0% | 100.0% | 100.0% |
| 551 | Engineering Technical Design | ETD-252 | . | 98.5% | 100.0% | 100.0% | 100.0% |
| 551 | Engineering Technical Design | ETD-255 | . | 88.9% | 100.0% | 100.0% | 77.8% |
| 551 | Engineering Technical Design | ETD-260 | . | 20.0% | . | . | . |
| 551 | Engineering Technical Design | ETD-261 | . | . | 76.9% | 62.1% | 61.2% |
| 551 | Engineering Technical Design | ETD-270 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| 551 | Engineering Technical Design | ETD-278 | 100.0% | 100.0% | 100.0% | 95.0% | . |
| 551 | Engineering Technical Design | ETD-280 | 90.0% | 94.1% | 70.6% | 75.0% | 79.2% |
| 551 | Engineering Technical Design | ETD-284 | 92.3% | 94.1% | 93.0% | 93.9% | 83.3% |
| 551 | Engineering Technical Design | ETD-287 | 83.3% | . | 88.9% | 100.0% | . |
| 551 | Engineering Technical Design | ETD-291 | 95.8% | 86.7% | 90.0% | 84.2% | 100.0% |
| 551 | Engineering Technical Design | ETD-297 | 100.0% | 95.8% | 91.7% | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-101 | 85.7% | 76.9% | 69.2% | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-102 | 100.0% | 100.0% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-103 | 100.0% | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-104 | 100.0% | 100.0% | 100.0% | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-112 | 92.3% | 71.4% | 75.0% | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-113 | . | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-114 | 46.7% | 90.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-122 | . | 95.7% | . | . | 85.7% |
| 552 | Heating, Air Cond, & Refrig | HVA-123 | 100.0% | 95.5% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-124 | . | 100.0% | 100.0% | . | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-140 | 82.5% | 80.0% | 79.3% | 70.4% | 75.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-141 | 84.2% | 100.0% | 85.7% | 97.4% | 85.7% |
| 552 | Heating, Air Cond, & Refrig | HVA-144 | 82.9% | 68.0% | 72.8% | 71.3% | 66.7% |
| 552 | Heating, Air Cond, & Refrig | HVA-160 | 87.0% | 86.1% | 87.5% | 81.8% | 93.8% |
| 552 | Heating, Air Cond, & Refrig | HVA-162 | 93.3% | 74.5% | 76.9% | 73.8% | 92.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-170 | 66.7% | 100.0% | 84.6% | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-174 | 100.0% | 92.3% | 83.3% | 83.3% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-177 | 77.5% | 80.0% | 82.4% | 79.7% | 83.3% |
| 552 | Heating, Air Cond, & Refrig | HVA-180 | 96.0% | 88.9% | 83.3% | 89.3% | 94.7% |
| 552 | Heating, Air Cond, & Refrig | HVA-184 | 81.8% | 80.9% | 73.0% | 91.8% | 86.7% |
| 552 | Heating, Air Cond, & Refrig | HVA-186 | 82.4% | . | 86.7% | 100.0% | 84.6% |
| 552 | Heating, Air Cond, & Refrig | HVA-190 | 87.5% | 89.5% | 100.0% | 81.1% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-194 | 93.8% | 94.7% | 100.0% | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-201 | 100.0% | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-202 | 100.0% | 100.0% | 80.0% | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-203 | 85.7% | 100.0% | 100.0% | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-204 | 83.3% | 100.0% | 100.0% | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-211 | . | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-212 | 100.0% | 100.0% | . | 66.7% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-213 | . | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-214 | 100.0% | 100.0% | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-221 | 100.0% | 88.0% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-222 | . | 100.0% | 100.0% | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-223 | 90.0% | 95.7% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-224 | . | 96.0% | 100.0% | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-231 | . | 100.0% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-232 | . | 100.0% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-234 | . | . | 100.0% | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-235 | . | . | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-236 | 92.3% | . | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-240 | 57.1% | 87.5% | 85.7% | 75.0% | 88.9% |
| 552 | Heating, Air Cond, & Refrig | HVA-243 | 100.0% | 80.0% | . | 100.0% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-250 | 100.0% | 100.0% | 92.3% | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-253 | 50.0% | 66.7% | 62.5% | 80.0% | 54.5% |
| 552 | Heating, Air Cond, & Refrig | HVA-254 | 100.0% | 100.0% | 71.4% | 87.5% | 100.0% |
| 552 | Heating, Air Cond, & Refrig | HVA-270 | . | . | . | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-272 | 85.7% | 100.0% | 85.7% | 91.7% | 87.5% |
| 552 | Heating, Air Cond, & Refrig | HVA-276 | 83.3% | . | 83.3% | 90.9% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-278 | 100.0% | 100.0% | 100.0% | 100.0% | . |
| 552 | Heating, Air Cond, & Refrig | HVA-286 | 66.7% | 66.7% | 68.8% | 87.0% | 95.2% |
| 552 | Heating, Air Cond, & Refrig | HVA-288 | 84.6% | 87.5% | . | . | . |
| 552 | Heating, Air Cond, & Refrig | HVA-297 | 93.0% | 90.8% | 83.3% | 100.0% | 100.0% |
|  |  |  |  |  |  |  |  |