ETIC: Transition Report
Oregon Education Investment Board

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ABSTRACT
Report from the State Board of Higher Education to the Oregon Education Investment Board on the current state of ETIC, in preparation for transfer of authority on July 1, 2014. As ETIC transitions to the OEIB, the Council is looking forward to working closely with the Board to continue ETIC’s existing restructuring and fund rebalancing efforts and to examine the question of the best long-term home for ETIC’s mission. This report is intended to give the OEIB members both the history and current status of ETIC, with an eye to helping the members come up to speed rapidly in order to be thoughtful decision-makers on the ETIC fund allocations and to provide substantive guidance on future directions.
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2 Executive Summary

Since 1997, by Oregon Statute 351.663, the Engineering and Technology Industry Council (ETIC) has advised the Oregon State Board of Higher Education (SBHE) on the investment of a fund to meet the urgent engineering education needs of Oregon's high technology industry. The fund has been continuously renewed during legislative sessions since establishment, primarily due to the consistent advocacy of the industry members.

ETIC consists of senior executives from high technology firms. The size of the council varies, but is currently at 15 voting members. Representatives from key industry associations and public universities are included as non-voting members.

ETIC’s outcome is the availability of relevant, quality engineering talent, and the primary metric to date was doubling the growth in engineering and technology graduates at all levels. In addition, ETIC invested in bringing quality faculty to Oregon, and in return expected to see increases in research expenditures as a consequence. Finally, to garner ETIC funding, universities were expected to develop private funds to augment any efforts and reflect industry engagement.

The current $29M/biennium fund is invested in the following institutions: Oregon Health & Sciences University (OHSU), University of Oregon (UO), Oregon State University (OSU), Portland State University (PSU), Oregon Institute of Technology (Oregon Tech), Southern Oregon University (SOU), Eastern Oregon University (EOU), and Western Oregon University (WOU). The majority of the funding, approximately $20M per biennium, is currently invested in OSU and PSU, which have the largest engineering schools.

With the passage of SB 270 in June, 2013, the scope of the Oregon State Board of Higher Education was slated to reduce its governance to the four technical/regional universities. With that change in scope, it introduced a potential conflict of interest for the SBHE in overseeing a fund that sent a majority of its investments outside the scope of the Board.

In response, ETIC sought an authority change through the legislature, and in the 2014 session, the passage of HB 4020 transferred ETIC’s authority to the OEIB through March, 2016. At that point, given no intervening legislative action, ETIC will transfer to the HECC.

The OEIB was selected over other short-term options for several reasons: 1) Its mission is on education investment, which matches ETIC’s goals, and ETIC is very consistent with the goals of the new STEM Investment Council and 2) It is seen as a temporary “safe harbor” as other options are explored for long-term placement. These possibilities include the HECC, Oregon Innovation Council, or other strategic options yet to be fully developed.

Goals for the long-term placement include coordinating more closely with relevant efforts within the Oregon workforce systems and economic development organizations to leverage shared strategies. ETIC will work with stakeholders over this upcoming year to find this new home.
After 15 years of operation, in early FY2014, ETIC declared a strategic restructuring that is underway. We are rebalancing our portfolio, emphasizing outcomes, and building a transparent allocation model for the future.

At heart, this work is to prepare ETIC to continue to support a critical talent pipeline for the high-technology traded sector technology industry into the future.

3 ETIC Strategic Review

As with any long-term successful initiative, ETIC periodically needs to take a serious look at its operations and consider revisions to strategy and approach to meet new challenges and conditions.

The basis for the review started by reviewing ETIC’s charter within the original legislation. All ETIC initiatives should tie directly back to this, and reflect adherence to the criteria for evaluating investments. ETIC used this language — which the Council believes are as relevant today as when ETIC was instantiated — as the guide for the review and following restructure efforts:

- **Mission focus.** To meet urgent industry needs for new and upgraded talent.
- **Investment quality.** Investments should provide the greatest benefits at the least cost; avoid duplication of existing resources; share resources across institutions; and minimize cost to the public.
- **Outcomes.** Investments should be performance-based, and leverage private investment.

3.1 Revisiting ETIC strategy and approach

As of last year, many engineering programs — despite success in growth in graduates, increased research expenditures and significant private match — were unable to reach full sustainability independent of ETIC support. Much of this was due to the concomitant decrease in state support for higher education during the same period that ETIC was investing. Expected program sustainability through state dollars was not achievable as projected. Eventually, a substantial portion of the ETIC fund investment was going to sustaining initiatives and not towards enabling new efforts or responding to emerging needs. This created an “eternal funding” dilemma for the council, and severely constrained its ability to address emerging needs.

Looking forward, the importance of the high technology industry to Oregon’s economy suggests that without increased flexibility within ETIC, the state will be unable to address challenges that could constrain competitiveness in the next decade.

Consequently, after a comprehensive examination that included industry, current and past ETIC council members, industry association representatives, universities, and government representatives, ETIC declared a strategic change in August, 2013 to prepare the fund for
the future. There was substantial agreement across stakeholder communities on the current strengths and limitations within ETIC. All options were considered prior to embarking on the strategy, including declaring the ETIC initiative complete and terminating the program. Due to current and urgent industry demand, that option was discarded in favor of revitalizing the program.

It was more coincidental than deliberate that the changes in the higher education structure occurred simultaneously. However, with those changes, it provides interesting and compelling alternatives for the ETIC restructure are very consistent with the outcomes-based, student-focused approach.

The newly declared strategy for ETIC is to return the fund to be used according to its original mandate — for change and growth initiatives — and to collaborate with the newly formed HECC to provide a reliable source of sustaining funding for engineering education. To this end, ETIC expects to reduce its funding size request in the upcoming biennium for the growth portion of the fund, and to advocate for an adjustment upward to the HECC higher education general fund allocation.

In addition, ETIC would like to make recommendations to the HECC regarding the “Oregon student, Oregon job” outcomes approach to allocating engineering-directed funds to incentivize continued support for this important talent pipeline for the high technology traded sector technology industry.

3.2 Revamping ETIC operations

Initial operational reviews indicated substantial weaknesses in the rigor of ETIC reviews and little knowledge or connections between the industry and university members. In addition, ETIC was not reaching out to external partners and stakeholders in any consistent or reliable manner. For ETIC to realize its mission, these deficits to be addressed.

The council took several significant steps to restructure for effectiveness:

- **Industry needs statements.** ETIC is now producing statements of need from industry, based on outreach to critical industry coalitions. These will drive all future investments. This approach is quite different from the ETIC historic practice of relying primarily on the universities to propose programs for consideration. It also deepens the outcomes that ETIC can measure, as they now become specific to an industry call to action.

- **Industry-university teams.** Instead of all-council meetings with universities, ETIC instituted teams specifically targeted at institutions to get deeper knowledge and mutual influence. All year, small groups of industry councilors and university representatives have been actively reviewing specific proposals and working together on their individual circumstances with respect to sustaining funding. This included developing better understanding among the industry council members on the university business models.
• **Rigorous proposal process.** ETIC instituted a revamped proposal process for its growth/innovation funding that required that each submission provide evidence of industry demand and benefit, clear outcomes, and a viable long-term sustainment plan. In addition, progress will be reviewed on an annual basis, with funding for the next year released only if the project is making progress. Rubrics for proposal evaluation were developed that used the key metrics identified in the legislative language.

• **Strategic partnerships.** ETIC reached out to its relevant industry associations, and has strengthened ties with the Technology Association of Oregon, Oregon Bioscience Association, Association of Oregon Industries and Oregon Business Association. The relationship has moved beyond including representatives as titular members of the council to engaging in shared work on needs statements and proposal evaluations. As part of those efforts, ETIC and TAO conducted surveys across the state for industry needs, particularly in software.

Finally, the council recognized that changes in the higher education governance structure were going to affect its authority, and pursued legislation to ensure the continued transparent operation of the fund under an appropriate statewide entity.

### 4 FY2014 ETIC Initiatives

After an industry member strategic review in July, 2013, a summary list of strategic declarations was adopted by the Council in August, 2013 that strongly reflects execution to the original legislative intent:

• **Renewable investment model is refined and in play.** Some portion of ETIC funding is now tied to specific initiatives against a change/growth funding model.

• **Clear industry needs.** Current ETIC strategic investment priorities and industry needs are sufficiently clear for the university to respond with specific, measurable, and relevant initiatives for FY2015.

• **Credible external metrics.** Metrics for use by external audiences have been crafted that reflect the revised strategy and industry needs.

• **Credible industry influence.** Industry members have an effective method for influencing the university to address current needs commensurate with level of investment. Industry members are confident in their ability to assess university performance.

• **Advocacy.** University members have industry advocacy to address needs, remove barriers, and motivate funding, especially for the 2015-17 biennium.

• **Path off of ETIC as the source of sustaining funding.** Universities have a credible plan for moving off of ETIC as the source of sustaining funding needs over time.

As part of this effort, the proposals for the current 2013-2015 biennium, submitted by the universities in February of 2012, were funded for the first year but not the second. ETIC held back any cost-of-living adjustment, and allocated the same level of funding as was given each of the universities in FY2012.
4.1 FY2014: Renewable Investment Model

Starting in FY2014, ETIC reserved a small pool of funds, drawn from the cost-of-living increase and the termination of the Oregon Pre-engineering and Applied Science (OPAS) initiative, to start a renewable fund to focus on growth and innovation initiatives. The fund total for the biennium is around $3.3M.

Investment criteria include a clear sustaining funding case, so that these new proposals do not fall into the same “eternal funding” dilemma that has constrained the current investments.

ETIC ran a proposal solicitation, campus proposals were submitted, and awards were made in November for initiatives beginning in FY2014, and ETIC is running an additional round currently for FY2015. [See Appendix C.]

This is a first-year experiment with this funding approach, and ETIC is learning from the experience and will be refining the needs-driven proposal process and the monitoring of the progress of projects.

4.2 FY2014: Clear Industry Needs

To realize the industry-driven mandate for ETIC, the council has revitalized its outreach to partner organizations representing industry coalitions in order to develop strong statements of need. These will drive the work of the council, and be the basis for analyzing proposals from post-secondary institutions. Focus on the research and creation of these statements from industry community members is a substantial shift from ETIC’s practice over the past few biennia, and reflects a renewed emphasis on driving the work of the Council from documented needs and benefits to industry.

We have a variety of statements from industry stakeholders, including (but not limited to) areas of cyber-security, software development talent, big data/analytics, and power engineering.

In addition, since the February 2014 legislation removed the Portland-centric language for ETIC, we have been aggressively reaching out across the state to industry that has been previously underserved by the council, including Eugene, Ashland and the Gorge.

ETIC expects to be able to document specifically the industry benefits and outcomes for all future investments.

4.3 FY2014: Credible External Metrics

At its inception in 1997, there was a severe shortage of quality technical talent in Oregon. To address the situation, ETIC focused on three primary metrics: number of graduates, amount of external research garnered by the universities, and amount of private match funding received.
As rough measures, these enabled early investments to bring faculty to Oregon to build capacity in the engineering and computer science programs. The research funding metric was an attempt to measure an increase in the quality of the institutions that in turn should be reflected in the quality of the graduates. Bringing talented faculty to Oregon had the additional benefit of providing a rich research resource to the state’s industry. Finally, ETIC emphasized bringing private dollars to bear on all investments. These were to be an indicator of industry commitment to the specific efforts funded by ETIC.

These metrics served the council well during its first decade. Engineering and technology programs grew, along with graduates. Research expenditures also grew, and for most institutions, private match funding was developed in significant amounts.

From the council’s perspective, without this emphasis on engineering talent, Oregon’s universities may well have fallen behind nationally, and this has been one aspect of Oregon’s economic environment that fosters our current crop of software and technology companies. In addition, ETIC-funded faculty members have been instrumental in being primary movers for the Oregon Innovation Council’s Signature Research Centers. Without the faculty, those programs may not have had the research talent available in quite the same numbers and capabilities.

In addition, the early emphasis from ETIC on generating private sources of revenue for the universities had the engineering schools well ahead of other colleges in healthy fundraising and outreach. This held the universities in good stead once state funding began its decline.

Over time, however, these metrics were not adjusted to meet changing conditions. Once a substantial portion of the ETIC funding was tethered to sustaining programs, it was no longer possible for ETIC to underwrite growth, and it became difficult to separate ETIC’s influence and outcomes from an overall measure of the institutions performance. Private match funding became very distant from the ETIC outcomes, as it was developed mostly through foundation work and not connected directly to ETIC initiatives.

To re-earn external credibility, ETIC must return to tangible and direct outcomes, tied to the use of the funds. Initially, ETIC is moving away from a high-level, one-size-fits-all set of metrics to a more nuanced evaluation of performance of specific initiatives directed at more targeted needs. Through this approach, ETIC hopes to improve its Oregon-industry driven influence within the university --- and other higher education institution --- programs. In particular, ETIC has the legislative mandate to address the professional development needs of working engineers, which is not reflected at all in the existing metrics.

The trade-off in this revision of metrics is a simple and direct external message. But what ETIC will gain in return is a much more efficient and targeted result.

The first trial of different metrics is in place with the growth/innovation funding for FY2014. ETIC will be conducting yearly, project-specific, reviews of progress prior to renewing funding for follow-on years in multi-year programs. All programs will be expected to demonstrate progress toward independence and sustainability beyond ETIC funding.
4.4 FY2014: Credible Industry Influence

As outlined in the prior sections, as the ETIC fund became tied to sustaining university programs, the degree to which the Council could exert change and growth diminished. In addition, outreach to industry to build strong evidence of need was moribund due to the lack of funding for growth/innovation.

With the creation of even a small renewable pool, we have rebuilt this critical industry-driven aspect of ETIC.

4.5 FY2014: Advocacy for Oregon Higher Education

ETIC council intends to remain a staunch advocate for Oregon engineering higher education, including support for the sustaining funding mechanisms that enable financial viability and success for the engineering and technology schools. The Council recognizes that without appropriate sustaining funding through the HECC, the renewable programs of ETIC may not be viable.

4.6 FY2014: Path Off of ETIC Sustaining Funding

After the declaration in August, 2013 that the FY2015 sustaining funding approach would be changing, the ETIC Council worked with the universities and explored many options for dealing with the sustaining funding required to support existing engineering programs.

As a starting point, ETIC suggested a plan to pull some of the sustaining funding into renewable proposals on a university-by-university basis, and move the remainder through the HECC, based on early signs that they would be amenable to a bump for engineering education in their outcomes-based approach.

To vet that approach, and understand the underlying university business model that was relying on the sustaining funding, ETIC asked the universities to complete an ETIC Sustaining Independence Plan (ESIP), which was designed to elucidate the issues for the industry councilors regarding the dependence on the sustaining funding, and to help create a viable and as much as possible, non-disruptive path forward that would be continuously, predictably and transparently funded into the future.

Here is an excerpt from the ESIP template:

... outline the strategy and plan for the university to move off of sustaining funding from ETIC over time. This plan will be negotiated within the IU Teams, and presented to the full ETIC for final consideration of sustaining funding.

You should structure your document as you see fit to best present your strategy.
**Note that there is no implied course of action.** ETIC is relying on the universities to step forward and propose how they would see accomplishing moving to independence from OEEIF, while preserving the results of investments that have been made to date.

In crafting a plan to move off of ETIC as a sustaining operational funding source, the following are potential, but not exhaustive, strategies to consider:

- **Move funds to renewable status**, by submitting ETIC Achievement Agreements that describe on-going work that meets ETIC needs.
- Advocate to **route a block of funding through the HECC** out of the OEEIF into the base budget of the university. This should be done in such a way as to preserve its use to the engineering school.
- **Negotiate with ETIC to retain sustaining funding for a period of time** and provide metrics associated with prior ETIC goals of capacity and research, including matching dollar commitments.

Depending on the strategy proposed by the university, ETIC may have different requests for information in order to help evaluate the proposal. To help the industry members evaluate the plan, they must understand the conditions behind the university dependence on continuing ETIC funding for sustaining operations.

OIT provided an excellent set of criteria in their ESIP response, which formed the basis of the approach developed by the council:

**Analysis & Options**  The ESIP template outlined three potential options for the university to consider: 1) Move funds to renewable status; 2) Advocate to route block funding through the HECC out of the OEEIF into the base budget of the university targeted for the engineering college; or 3) Negotiate with ETIC to retain sustaining funding for a period of time and provide metrics associated with prior ETIC goals of capacity and research. Oregon Tech has considered the three options and it is capable of accommodating any of the three depending on the overall strategic objectives of ETIC, input from the IU Team, and the decisions made by our sister universities.

Oregon Tech is very encouraged and applauds the actions taken by ETIC to create an innovation/growth/renewable fund that enables the universities to submit ETIC Achievement Agreements for programs and initiatives specifically addressing emerging needs. We were very encouraged to see ETIC gaining flexibility and the ability to co-invest with the university to provide time-bound seed funding for
initiatives designed to meet urgent industry needs. In particular, we were very pleased of how this pilot program worked in 2014, and we support this direction of ETIC.

In addition to the seed funding provided by the newly conceived ETIC renewable fund that will enable Oregon Tech to better meet urgent industry needs and enhance our ability to promptly respond to these by having a co-investor (ETIC) at the onset of the project, we believe that Oregon’s engineering universities would also greatly benefit by having a predictable, reliable, sustaining funding source that enables long-term investments in capacity and capability where the strategic vision and time horizon is over 15 years. In order for our engineering colleges and departments to be globally competitive and provide excellent education, they need long-term strategies with a long-term focus. Given the hypercompetitive and highly dynamic/fast changing industry environment that our engineering graduates and industry partners are currently encountering, these initiatives need to go beyond responding to urgent or immediate industry needs (short-term focus) and need be designed to be sources of strategic competitive advantage over long periods of time (typically over 30 years). These strategies require predictable, long-term funding.

ETIC and the universities need balance between renewable (innovation/growth) and predictable (long-term sustaining funding). Too much predictable funding for a given university can actually be detrimental. Similarly, excessive amounts of renewable funding could result in malinvestment due to the potential short-term focus associated with meeting urgent needs. Based on these two competing interest, Oregon Tech would advocate for a model as follows:

1) Renewable, Innovation, Growth Fund: enabling the universities to submit specific proposals describing initiatives and strategies to meet urgent industry needs, and where ETIC has the flexibility and discretion to fund (substantially equivalent to the ETIC 2014 model).

2) Predictable, Long-Term Sustaining Funding: 10% of the direct labor costs associated ETIC aligned initiatives to increase engineering capacity and competitiveness over long periods of time (15-30 year horizons). Oregon Tech would be open to any of two options presented in the document (route block to HECC or ETIC sustaining fund for this purpose). A 10% sustaining fund ($1M per year approximately) will enable us to add capacity in areas of long-term strategic interest.

ETIC did not receive constructive ESIPs from either PSU or OSU, and was left with providing a sensible and justifiable recommendation to the legislature and to HECC regarding sustaining funding.

The Council’s goals were to recommend to the HECC an approach that would: 1) be transparent, equitable and easy to administer; 2) scale over time; 3) be amenable to
forecasting for the universities over several biennia; and 4) work in concert with the
growth/innovation funds over time.

Both cost-based and outcomes-based approaches were considered. In the end, the Council
is recommending to the OEIB/HECC based on an “Oregon student, Oregon job” outcomes
approach.

At this point in time, all sustaining funding, without any cuts, is being allocated through this
approach. Since the existing allocations are based on historic patterns of funding for the
universities, this will result in some shifts of funding amongst institutions.

5 FY2015 ETIC Funding Recommendations

For FY2015, there will be several buckets of funding:

1. Growth/innovation awards
2. Sustaining funding based on both
   a. historic allocations
   b. “Oregon student, Oregon job” outcomes

5.1 Growth/Innovation award funding

ETIC has run two rounds of proposals for the growth/innovation funds. These are (or will
soon be) awarded. Reviews of the FY2014 progress are (or will be) conducted prior to
authorizing continuing funding for FY2015.

5.2 Sustaining funding: historic and “Oregon student, Oregon job”

Some portion of the sustaining funding will be based on historic allocations by institution.
To decide which portion and how much, in January 2014, ETIC requested that the
institutions identify the faculty supported by the ETIC funds in a sustaining manner. This
allowed ETIC to see which disciplines were receiving support, and the level of that support.

One key observation after collecting the data was that the allocation to institutions based on
analysis of “Oregon student, Oregon job” revealed tremendous discrepancies across schools.
For example, ETIC was subsidizing one school over $29,000 per computer science graduate
while giving another school nothing. And the range of allocations in between was spread
along the continuum. For sustaining graduate production, the council could not see
justification for the magnitude of the differences, so it became apparent that in moving to
the outcomes model, that some institutions would benefit financially and others would not.

To rebalance the portfolio accordingly and incrementally, several approaches were
considered. The criteria for selecting an approach were ease of implementation, size of
impact and ability to address as quickly as possible the most critical and urgent needs.

From the statewide needs assessment and employment department forecasts, it is clear that
Oregon continues to have a pervasive and persistent shortage in software development
talent that stretches across all regions and touches most industries. In particular, Lane County has written a needs statement that clearly outlines the problems that their local industry has in recruiting talent, despite the presence of University of Oregon. Likewise, the South Valley region has been very active in trying to create a computer science program at Southern Oregon University to meet the hiring needs for their E-commerce cluster. The Technology Association of Oregon ran a survey in the Portland area and discovered the same patterns, and anecdotal evidence suggests that the Gorge area is similar.

For that reason, the council decided to explore a “discipline-pool” based approach to rebalancing, where each year or two a set of relevant disciplines would be moved to the outcomes model, starting with computer science and electrical engineering (which is often strongly coupled with computer science). This had the benefit of immediately bringing relief to several schools to help address their local shortfalls, while having a reasonable incremental step in reallocating funding. Right now this is the most viable scenario.

The universities were surprised that there is indeed a way to get mean/median salary and Oregon employment data for their graduates in aggregate, based on social security numbers. The costs to do this are very low ($1,500/10,000+ SSNs) and the timeline is quick. It relies on collaboration between the OUS Institutional Research department and the Oregon Employment Department. This looks to be promising and simple to implement from here forward.

ETIC recognizes that for the “Oregon student, Oregon job” outcome, the portfolio will need to be rebalanced. Instead of introducing a sudden shift of funding, ETIC is recommending staging the process from FY2015 through FY2019, moving incrementally to the outcomes approach.

What follows are some discussion points relative to the recommendation. This should be finalized in the near term, based on refined data and resolution to a couple of questions highlighted below.

**Why just resident graduates?**

Non-resident students pay tuition that fully covers the cost of their education. There is no need to use limited state resources to reward the universities for these graduates.

ETIC recognizes that importing talent from out of the region is valuable to the state’s industry. However, ETIC expects that this graduate-outcomes approach will provide strong incentives to seek placement for graduates in Oregon, and a natural spillover will happen as those programs work for both resident and non-resident graduates.

In addition, Oregon’s industry acknowledges and values that Oregon graduates tend to be “sticky” and more likely to stay in the state for the long term, as opposed to those graduates who may leave after a few years.

Should there be a short-term gap that requires that significant talent be imported to the state, ETIC may choose to temporarily reward for targeted non-resident graduates in
specific disciplines through the use of ETIC renewable funds.

Why just placed in Oregon?

Since ETIC’s mission is narrowly drawn to meeting Oregon’s industry needs, we choose to focus on placements that provide direct benefits to Oregon.

Once placed in Oregon, there is a direct tax benefit to the state where this award may be easily recouped within a few years of employment.

Provides a positive incentive for universities to align their programs with local industry.

Why pay at the end?

The best indication of a valuable graduate is the placement of that graduate within industry. If this program is phased in over a 4-year period, there should be a rolling effect, and the universities should be able to forecast revenues accordingly.

In addition, this approach provides an incentive for universities to exceed their forecasts by cooperating with feeder schools, such as community colleges, to increase their graduate rates at lower costs.

How does this relate to the renewable funding?

ETIC recognizes that the universities are working on longer timescales which are less responsive to the short-term economic conditions. There must be a strategic planning component that looks forward in such a way to support the pipeline and shifting of resources within the universities. This may be a 5-10 year forecasting process, in partnership with the universities. The universities, HECC and industry must have a shared strategic viewpoint.

How might this be extended to the rest of the engineering disciplines, or other fields with significant industry demand?

ETIC recommends that if there are significant other Oregon industry clusters with similar needs, that ETIC either be extended in its mission to include other clusters, or that other ETIC-like councils be instituted. All of these should have an advisory role with the HECC. Healthcare may be one such area, where the education of students is more expensive than other disciplines, but the demand is high within industry.

What is ETIC’s role with the HECC looking forward?

ETIC hopes to continue to advise the HECC, especially with regard to the following:
• Identifying university/community college disciplines, programs, degrees/certificates that should be included.
• Qualifying higher education institutions for participation.
• Providing forecasts for workforce needs that can inform the size of the award. The awards should be increased or diminished to accommodate shifting state and industry needs. However, this should be done gradually to allow institutions to adjust in accordance with trends.
• Informing the HECC of new programs or approaches that are being tested with renewable funds and that could affect the delivery of engineering education and the HECC.

**What is the size of the outcome award?**

The pool allocated for outcome awards will vary based on the current and forecast capacity needs of the state. The structure of the program should be designed to give plenty of forward notice to the universities for either increases or decreases in the pool, to allow them to adjust programs and counsel students accordingly.

The award should be sufficient incentive for the universities to provide engineering education, which we recognize is more expensive to deliver than other disciplines. We will use the difference between in-state and out-of-state tuition level as the maximum for any award.

As higher-education institutions are better able to provide consistent, reliable and department-level cost information regarding their programs, this may be taken into account when setting award levels. This helps ensure that programs are viable long term, even as demands waxes and wanes.

For assessing quality of graduates, the mean or median starting salary across an institution’s qualifying graduates will be used as an objective measure. Awards for a specific degree will vary in accordance. This should address the concerns about the potential differences in graduates across different institutions. Note that this doesn’t say anything about the quality of an institution as a whole, only how much in demand their particular graduates are for this industry cluster.

**What reporting will be required?**

Universities will be required to provide graduates rates by residency, and to compute the mean or median starting salary for all resident graduates placed in Oregon. It is not expected that ETIC should need any individual graduate data.

This may require the participation of the Oregon Employment Department in order to correlate graduates with state tax records. There is an open question about how to annualize salaries for graduates. It may require going back a couple of years to get annualized figures for graduates.
Why aren’t we rewarding differently by degree level?

This is possible, but adds to complexity of the model. The question is whether that complexity is actually material in making the decision.

Originally, the goal of using the median was to measure the relative quality between schools for a same-level graduate.

However, using the median, gives us some capability to reward for graduate education, without making the model overly complex. We can collapse quality and relative degree value into a single number: that is, we can measure both the relative quality across institutions for the same degree level and incorporate the increased market value for higher level degrees, without having to differentiate among the various approaches. This allows us to use a pure market approach.

In addition, the tuition for resident graduate education is far closer to the tuition paid by non-residents. Thus graduate education reaches closer to parity and the true costs for the delivery.

In summary, the median should reflect the overall market value of a non-differentiated graduate produced by that institution. The total funding received depends as well on the number of graduates produced.

Here are some further thoughts about the <perhaps unintended> value in not addressing the differentiation by degree.

Here is some complexity that it eliminates:

- If we try to cut the population of graduates into smaller pools by degree level, we may get into an escalating problem with determining the industry average salary for such a specific target. Right now it is fairly straightforward using employment department data.
- If an institution has average BS and average MS students, they wouldn’t see any quality bump if we differentiate by degree. If we then wanted to reward for MS production, we would need to supply some other kind of incentive to the system.

Here are some business case scenarios enabled by the simple model. An institution could:

- Focus on increasing the quality of their undergraduate program without introducing higher level degrees, and show value to the market.
- Maximize its funding by being selective on its entering undergraduate population, say drawing from those with existing work experience who will garner higher salaries simply because of the overall value of their backgrounds. This could reward efficient production of graduates like the OSU post-baccalaureate program.
- Expand to include a variety of professional education certificates, that may have shorter-term completions but yield market value. We might need to require some kind of median entering salary level for students in these programs, to normalize the market delta.
We may also choose to use the renewable funds for short-term bursts of demand at the graduate level for specific disciplines.

**Existing questions and issues...**

- How would we recognize community college contributions?
- Is this model a counter-incentive for addressing more challenged populations of students (e.g. First generation, non-English speaking...)
- What about students moving on to grad school? Especially out of state?

A more useful model would include the median estimate salary for the students when they entered the program, thus rewarding the delta in capability that was produced by the institution. This may be an improvement to introduce later, which could also reward equity-based behavior (that is, reaching out to first generation or lower income populations.)

### 6 OEIB and ETIC

There are two critical pieces of OEIB’s work with ETIC in the next year: deciding on the fund allocations for FY2015 and working on a long-term home. OEIB will also be asked to review the ETIC by-laws changes, in light of the transition to OEIB.

#### 6.1 OEIB: FY2015 allocations

As ETIC is advisory to the OEIB, ETIC will be preparing proposals for how to allocate the ETIC fund for FY2015 to the universities. OEIB will make the decision about allocations. Following that, contracts will be finalized with each of the targeted institutions.

These recommendations will be presented to the OEIB in September at the OEIB meeting, unless otherwise directed. ETIC will be ready as early as July with final recommendations.

#### 6.2 OEIB and ETIC Future

For the next biennium, ETIC will need to have located a solid future organizational home within the state’s structure. There are ongoing conversations about the options. We will be including stakeholders within the education system, workforce systems, and economic development organizations to explore viable options. ETIC appreciates the OEIB’s role in facilitating this long-term plan.
A. Appendix: ETIC Membership and Proposed By-Laws

**Voting Members**  
Chair – Eric Meslow, Timbercon  
Vice-Chair – Chris Brooks, WebMD

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<thead>
<tr>
<th>Name</th>
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<tr>
<td>Jeff Blank</td>
<td>3D Systems</td>
<td>P.O. Box 1000 M/S 60-060</td>
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<tr>
<td>Eileen Boerger</td>
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<td>419 SW 11th Ave. Suite 300</td>
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<td><strong>GM Central Architecture and Planning</strong></td>
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| **Tuan Phamdo** (alternate) | Director of Extreme Technology | Intel Corporation  
2111 NE 25th Ave.  
Hillsboro, OR 97124 |
| **Mike Rohwer** | CEO & Founder | Performance Health Technology  
3993 Fairview Industrial Dr. SE  
Salem, OR 97302 |

**NonVoting Members - Academic**

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<th>Name</th>
<th>Title/Role</th>
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| **Mateo Aboy** | Associate Provost & VP for Research | Oregon Institute of Technology  
27500 SW Parkway Ave.  
Wilsonville, OR 97070 |
| **Steve Adkison** | Provost & SVP for Academic Affairs | Eastern Oregon University  
One University Blvd  
La Grande, OR 97850 |
| **Scott Ashford** | Dean, College of Engineering | Oregon State University  
101 Covell Hall  
Corvallis, OR 97331 |
| **Andy Berglund** | Associate Dean of the Graduate School | University of Oregon  
1219 University of Oregon  
Eugene, OR 97403 |
| **Dan Dorsa** | Vice President for Research | OHSU  
3181 Sam Jackson Park Rd, L335  
Portland, OR 97239 |
| **Charlie Jones** | Dean, School of Engineering, | Oregon Institute of Technology  
3201 Campus Drive |
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<td>Jim Klein</td>
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<td>Southern Oregon University</td>
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<tr>
<td>Laura McKinney</td>
<td>Executive Director, ETIC</td>
<td>Oregon University System</td>
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<td></td>
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<td>Steve Scheck</td>
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**NonVoting Members – Associations**

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<tr>
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<td>Betsy Earls</td>
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BYLAWS
ENGINEERING & TECHNOLOGY INDUSTRY COUNCIL (ETIC)
Revised and Adopted, August May 9, 2013
To take effect on July 1, 2014

I. PURPOSE
The purpose of these bylaws is to establish policies and procedures for the operation of the Engineering and Technology Industry Council (ETIC). Such bylaws are intended to be consistent with ORS 351.663, 351.666 and 351.668 and to facilitate public understanding of the role, policies and procedures of ETIC.

II. ETIC ROLE
The role of ETIC is to advise the Chancellor Chief Education Officer of the Oregon University System Education Investment Board and the State Board of Higher Education on how Oregon public and private educational institutions can best improve and expand engineering facilities, programs and educational capacity to meet the engineering and technology needs of Oregon’s public and private sectors with an emphasis on economic growth and opportunity. In particular, ETIC shall provide advice on all matters related to the investment of funds separately appropriated by the Oregon Legislature for these purposes.

III. VOTING MEMBERS
A. ETIC shall be composed of between eight and twenty voting members appointed in writing by the Chancellor Chief Education Officer. Voting members shall not be employees of Oregon public and private educational institutions. Appointment of voting members shall be for renewable terms of up to four years each. Resignations from ETIC should be made in writing to the Chancellor Chief Education Officer. Appointments may be made at any time to replace members or expand ETIC membership. The Chancellor Chief Education Officer may also appoint official alternates for certain voting members providing that the alternate is from the same organization. Such members shall vote instead when the other corresponding member is absent from a meeting or otherwise unable to vote.

B. At least three-fourths of the voting members shall represent employers with Oregon operations that employ engineers, computer scientists or material scientists. One voting member will be drawn from the STEM Investment Council. Such members will hold senior executive positions in their companies, with exceptions being made at the discretion of the Chancellor Chief Education Officer.

C. From among the members of ETIC, the Chancellor Chief Education Officer shall appoint a Chair of ETIC who is responsible for chairing ETIC meetings and conducting the business of ETIC. A resignation of the Chair should be made in writing to the Chancellor Chief Education Officer. Appointment of a successor shall follow the provisions of this section.

D. The Chancellor Chief Education Officer shall appoint one or two Vice Chairs of ETIC from within the members of ETIC. Either vice chair may perform the
duties of the Chair in the Chair’s absence. A resignation of a Vice Chair should be made in writing to the Chancellor or Chief Education Officer. Appointment of a successor shall follow the provisions of this section.

E. With prior approval by the Chair, voting members may select alternates to represent them on ETIC. Without such approval, alternates may participate in ETIC meetings on a non-voting basis.

IV. NON-VOTING MEMBERS
A. In addition to voting members, ETIC shall have up to thirty non-voting members. These shall include the Chancellor of the Oregon University System or Chief Education Officer; and one member from each Oregon public university with programs in engineering, computer science or material science; and at least two representatives from Oregon community colleges with pre-engineering or computer science programs. These members shall serve as long as they retain the same position at their university institution or until their successor is appointed. Additional non-voting members may be appointed for two-year renewable terms, including past voting members, representatives of industry organizations, private universities, other community colleges, governmental agencies and other organizations.

B. Those that are legitimately appointed as voting members of ETIC who also qualify for non-voting status shall be considered voting members in good standing.

V. MEMBERSHIP
A. Members are not reimbursed for the routine costs of their attendance and participation in ETIC meetings. At the discretion of the Executive Director, voting members may be reimbursed for certain other costs.

B. Members who change employment, change their role at their current place of employment or leave Oregon may be asked to resign by the Chancellor or Chief Education Officer.

VI. STAFF SUPPORT
The Chancellor or Chief Education Officer shall assign employees of the Oregon University System to support ETIC including an Executive Director. The Executive Director shall work in consultation with the Chair and Vice Chair(s) to prepare and distribute materials such as agendas, minutes, reports, action items and the like, to manage ETIC records, to maintain an ETIC website and to assume other responsibilities as assigned by the Chair, Vice-Chair, or the Chancellor or Chief Education Officer. Costs associated with ETIC activities shall be funded through the Office of the Chancellor. Such funding may include allocations from funds separately appropriated by the Legislature to support engineering, computer science, and technology programs.

VII. MEETINGS
A. ETIC shall meet at least quarterly. These meetings will be open to the public.
B. The Executive Director shall distribute an agenda, minutes from the previous meeting and other materials at least four days before the meeting. The Chair may amend the agenda and distribute other materials at the meeting as circumstances require.

C. In order to conduct business, a quorum of at least one half of the voting membership, but not less than five, shall be present. Members may participate via teleconferencing or other interactive media. Any formal action of ETIC requires approval by a majority of the voting members participating.

D. Meetings shall be conducted in a collegial manner intended to afford broad input. Roberts Rules of Order will serve as a guide should parliamentary issues arise.

E. Should ETIC fail to reach a quorum at a regularly scheduled meeting or should the Chair decide that action on certain agenda items should be taken prior to the next regularly scheduled meeting, the Chair may direct the Executive Director to conduct a vote by electronic mail or equivalent method. This voting process shall provide all voting members at least 10 days written notice. In such cases all members shall be provided a mechanism for communicating their questions, opinions or concerns to all other members during this ten-day period. Any decisions made between meetings will be subject to ratification at the next regular meeting of the ETIC.

VIII. COMMITTEES
ETIC may form committees or task forces from time to time. Such committees and task forces shall have whatever responsibilities that ETIC gives them that are consistent with these bylaws. Any decisions or recommendations they make shall be subject to review at the next meeting of ETIC.

IX. RECORDS RETENTION AND AVAILABILITY
The Chancellor’s Office Oregon Education Investment Board shall retain and manage all ETIC records, including these bylaws, in a manner consistent with Oregon’s public University System records retention policies. To facilitate public understanding of the role, policies and procedures of ETIC, agendas, minutes, key decision documents, rosters of voting and non-voting members, bylaws, reports and the like shall be included on the ETIC website.

X. CONFLICT OF INTEREST
ETIC members are subject to the provisions of ORS 244 and OUS OEIB Board Policy regarding conflict of interest. The Executive Director shall provide written guidance to members regarding these provisions and procedures should actual or potential conflicts of interest arise or should members convey questions or concerns on such matters in writing to the Executive Director.

XI. LIABILITY
ETIC members, who are not state employees, serve as volunteers. As such they shall be offered any liability or insurance protections provided by the University System state to other volunteers. The Executive Director shall provide written material regarding this issue upon request by any member.
XII. **AMENDMENT OF BYLAWS**
These bylaws may be amended by a majority vote.
### ETIC Summary of Investments

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*in millions*

2003-2005 0.74 precollege included in host university allocations (OIT, OSU, PSU/SatAcad)
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OPAS investment of .937M not included in first column

* From ETIC Plan for 2011-2013 Biennium

** Reflects actual faculty in existing ETIC-support positions supported on 6/30/13 and no vacant existing positions or new positions.
### Metrics Data

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#### Undergraduate Student Credit Hours

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### Master's Degrees Granted

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### Graduate Student Credit Hours

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Grand Total: 1,174 1,433 1,523 1,774 1,848 1,813 1,592 1,783
### INTELLECTUAL PROPERTY METRICS

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<td><strong>TOTAL</strong></td>
<td><strong>79</strong></td>
<td><strong>94</strong></td>
<td><strong>65</strong></td>
<td><strong>9</strong></td>
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</table>

**Notes on Intellectual Property Metrics:**

1. # invention disclosures received by your college or department as reported to Association of University Technology Managers
2. # patent licenses or other royalty-generating intellectual property licenses granted to commercial entities
3. $ income received (thousands) from patent and other intellectual property licenses granted to commercial entities
4. # spinoffs as reported to Association fo University Technology Managers

*PSU - 3 existing start-up companies (2 ongoing, 1 new in FY13)*
C. Appendix: FY2014 Investments

ETIC Renewable Funding -- FY14 Proposal Awards

approved by ETIC Voting members November 15, 2013

<table>
<thead>
<tr>
<th>ProID</th>
<th>University</th>
<th>Short title</th>
<th>Faculty</th>
<th>FY2014</th>
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<td>2014-01</td>
<td>PSU</td>
<td>New Beginnings</td>
<td>Harrison</td>
<td>$124,520</td>
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<td>2014-02</td>
<td>PSU</td>
<td>RF-Analog</td>
<td>Campbell</td>
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<tr>
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<td>PSU</td>
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<tr>
<td>2014-05</td>
<td>PSU</td>
<td>Envoys*</td>
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<td>OIT</td>
<td>Portfolio-systems</td>
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<td>Chiasson, Zipay</td>
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<td>2014-09</td>
<td>OSU</td>
<td>Robotics**</td>
<td>Stone</td>
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<tr>
<td>2014-10</td>
<td>UO</td>
<td>Bioinfo/Big data**</td>
<td>Berglund, Cresko, Espy, Larson</td>
<td>$180,000</td>
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<tr>
<td>2014-11</td>
<td>PSU, OSU, OIT</td>
<td>Power Engineering**</td>
<td>Bass, Cotilla-Sanchez, Garibay</td>
<td>$185,451</td>
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</table>

$1,330,000

Notes
*Envoys will receive funding from OPAS fund balance.
**Funding includes 1:1 match requirement for space improvements/equipment requests.
Follow-on Requests for FY2015 and beyond have been identified but not committed.

Full Titles

2014-02 Project-Based Radio Frequency Analog Education
2014-03 Fast Track BS+MS Program in Engineering and Technology Management between Portland State University and Oregon Tech Wilsonville
2014-04 Integration of Sustainability concepts, approaches and design practices across the Engineering Curriculum
2014-05 Continued Funding for the PSU Engineering Envoy Program
2014-06 Electrical and Computer Engineering Labs to Support Oregon Tech – PSU Westside Partnership
2014-07a New Program Development & Capacity Increases for High-Demand Engineering & Technology BS & MS Degrees at Oregon Tech Wilsonville
2014-07b Grid Integration of Renewable Energy Sources (“Smart Grid” with “Smart Buildings”)
2014-09 Graduate program in robotics
2014-10 University of Oregon Graduate Internship Program in Bioinformatics and ‘Big Data’ Genomics
2014-11 Oregon Power Engineering Education Project
D. Appendix: ETIC Legislation
CHAPTER 85
AN ACT
HB 4020

Relating to the Engineering and Technology Industry Council; creating new provisions; amending ORS 351.663; repealing ORS 351.666 and 351.668; appropriating money; and prescribing an effective date.

Be It Enacted by the People of the State of Oregon:

SECTION 1. ORS 351.663 is amended to read:
ORS 351.663. (1) The Engineering and Technology Industry Council is established. A majority of the council members are representatives of high technology companies in Oregon. The council shall be consulted on the work plans and resource allocations for engineering education.

(2) The council shall establish criteria and measurements that will be used for determining investments made from the account [designated by ORS 351.666] established under section 5 of this 2014 Act.

(3) The criteria and measurements established by the council include:

(a) Responding to the urgent engineering educational needs of Oregon’s fast growing high technology industry, especially in the Portland metropolitan area.

(b) Increasing this state’s faculty and program capacity to meet the graduate level, professional education needs of engineers working in Oregon’s high technology industry through investments in public and private institutions.

(c) Creating additional opportunities for Oregonians to pursue education in electrical engineering, computer engineering and other engineering disciplines critical to the advancement of Oregon’s high technology industry.

(d) Investing relatively scarce state financial resources to:

(A) Address the high technology industry's most demonstrated and pressing needs;

(B) Produce the greatest amount of educational benefits with the least short-term and long-term costs to the public;

(C) Avoid duplicating existing public or private resources; and

(D) Leverage existing and future private resources for the public benefit.

(e) Making all investments in public and private institutions through performance-based contracts with measurable outcomes in order to ensure strong linkage between the most urgent engineering education needs and implemented solutions.

(f) Maximizing the leverage of state investment funds to build faculty and program capacity and share existing and new faculty and program resources.

(4) Priority is given to investments where private financial resources from Oregon high technology companies or individuals with significant interests in the growth of high technology in Oregon are made available to augment public funds.

(5) The council must submit biennial performance reviews of all investments made to improve engineering education with public funds in public and private institutions. The reviews must be submitted to the [Chancellor of the Oregon University System; Chief Education Officer and the [State Board of Higher Education] Oregon Education Investment Board.

SECTION 2. ORS 351.663, as amended by section 1 of this 2014 Act, is amended to read:
ORS 351.663. (1) The Engineering and Technology Industry Council is established. A majority of the council members are representatives of high technology companies in Oregon. The council shall be consulted on the work plans and resource allocations for engineering education.

(2) The council shall establish criteria and measurements that will be used for determining investments made from the [account established under section 5 of this 2014 Act] Engineering and Technology Industry Fund established under section 8 of this 2014 Act.

(3) The criteria and measurements established by the council include:

(a) Responding to the urgent engineering educational needs of Oregon’s fast growing high technology industry.

(b) Increasing this state’s faculty and program capacity to meet the graduate level, professional education needs of engineers working in Oregon’s high technology industry through investments in public and private institutions.

(c) Creating additional opportunities for Oregonians to pursue education in electrical engineering, computer engineering and other engineering disciplines critical to the advancement of Oregon’s high technology industry.

(d) Investing relatively scarce state financial resources to:

(A) Address the high technology industry’s most demonstrated and pressing needs;

(B) Produce the greatest amount of educational benefits with the least short-term and long-term costs to the public;

(C) Avoid duplicating existing public or private resources; and

(D) Leverage existing and future private resources for the public benefit.

(e) Making all investments in public and private institutions through performance-based contracts with measurable outcomes in order to ensure strong linkage between the most urgent engineering education needs and implemented solutions.

(f) Maximizing the leverage of state investment funds to build faculty and program capacity and share existing and new faculty and program resources.

(4) Priority is given to investments where private financial resources from Oregon high technology companies or individuals with significant interests
in the growth of high technology in Oregon are
made available to augment public funds.
(5) The council must submit biennial perform-
ance reviews of all investments made to improve
engineering education with public funds in public
and private institutions. The reviews must be sub-
mitted to the Chief Education Officer and the Ore-
gen Education Investment Board Higher Education
Coordinating Commission.

SECTION 3. The amendments to ORS 351.663
by section 2 of this 2014 Act become operative
on March 15, 2016.

SECTION 4. ORS 351.666 and 351.668 are re-
pealed.

SECTION 5. (1) An account in the Oregon
Education Investment Fund established under
section 3, chapter 519, Oregon Laws 2011, is es-

tablished for the purpose of investments in en-
gineering education. Notwithstanding section 3,
chapter 519, Oregon Laws 2011, interest earned
on moneys in the account is credited to the ac-

count.
(2) The Oregon Education Investment Board
shall use the moneys in the account designated
by this section solely for the purpose of invest-
ing in engineering education. The board shall
follow the criteria and measurements estab-
lished by the Engineering and Technology Indus-
try Council in allocating moneys for invest-
ments in engineering education.

SECTION 6. (1) The account designated un-
der ORS 351.666 for investments in engineering
education, within the Oregon University System
Fund established under ORS 351.506, is abol-
ished.
(2) Any moneys remaining in the account on
the effective date of this 2014 Act that are un-
expended, unobligated and not subject to any
conditions shall be transferred to the account
established under section 5 of this 2014 Act for
the purpose of investments in engineering edu-
cation.

SECTION 7. Section 5 of this 2014 Act is re-
pealed on March 15, 2016.

SECTION 8. (1) The Engineering and Tech-
nology Industry Fund is established in the State
Treasury, separate and distinct from the Gen-
eral Fund. Interest earned by the Engineering
and Technology Industry Fund shall be credited
to the fund.
(2) Moneys in the fund are continuously ap-
propriated to the Higher Education Coordinating
Commission. The commission shall use the
moneys in the fund solely for the purpose of in-
vesting in engineering education. The commis-
sion shall follow the criteria and measurements
established by the Engineering and Technology
Industry Council in allocating moneys for in-
vestments in engineering education.

SECTION 9. (1) The account established un-
der section 5 of this 2014 Act for investments in
engineering education, within the Oregon Edu-
cation Investment Fund established under sec-
tion 3, chapter 519, Oregon Laws 2011, is abol-
ished.
(2) Any moneys remaining in the account on
March 15, 2016, that are unexpended, unobli-
gated and not subject to any conditions shall be
transferred to the Engineering and Technology
Industry Fund established under section 8 of
this 2014 Act.

SECTION 10. Sections 8 and 9 of this 2014
Act become operative on March 15, 2016.

SECTION 11. Notwithstanding any other
provision of law, the General Fund appropri-
ation made to the Oregon Department of Ad-
ministrative Services for use by the Oregon Uni-
versity System by section 1 (2), chapter 564,
Oregon Laws 2013, for the biennium beginning
July 1, 2013, for state programs, is decreased by
$14,805,721 for transfer of funding for the Engi-
neering and Technology Industry Council to the
Oregon Education Investment Board.

SECTION 12. Notwithstanding any other
provision of law, there is appropriated to the
Oregon Education Investment Board, for the
biennium beginning July 1, 2013, out of the
General Fund, the amount of $14,805,721 for the
account established in section 5 (1) of this 2014
Act for investments in engineering education.

SECTION 13. This 2014 Act takes effect July
1, 2014.

Approved by the Governor April 1, 2014
Filed in the office of Secretary of State April 2, 2014
Effective date July 1, 2014
E. Industry Needs Statements

ETIC is in the process of developing a full portfolio of Industry Needs Statements. We expect that document to be available later this summer.

Examples include the following:

- Big Data
- CyberSecurity
- Electric Power Industry
- Interconnected Devices
- Lane County Computer Science
- T-Shaped Professionals