



# IEEE P2814

## Recommended Practices on Techno-economics Terminology for Hybrid Energy and Storage Systems

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**Date: February 27, 2020**

Time: 02:00 PM (GMT)

Venue: [join.me](https://join.me)

# Agenda

1. Call to Order
2. Roll call of individuals & declaration of affiliation
3. Approval of agenda
4. IEEE Patent Policy
5. IEEE Copyright Policy
6. Approval of the minutes of the last meeting
7. Scope and boundaries of the PAR
8. Identify sub-working groups
9. Appointment of Officers
10. AOB
11. Future meetings
12. Meeting adjourned

## Participants have a duty to inform the IEEE

- Participants shall inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants should inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential  
Essential Patent Claims is encouraged**

# Ways to inform IEEE

- **Cause an Letters of Assurance (LOA) to be submitted to the IEEE-SA (patcom@ieee.org); or**
- **Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or**
- **Speak up now and respond to this Call for Potentially Essential Patents**

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

# Other guidelines for IEEE WG meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
  - **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
  - **Don't discuss specific license rates, terms, or conditions.**
    - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
      - **Technical considerations remain the primary focus**
  - **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
  - **Don't discuss the status or substance of ongoing or threatened litigation.**
  - **Don't be silent if inappropriate topics are discussed ... do formally object.**

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For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

# Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE-SA Standards Board Bylaws***  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- ***IEEE-SA Standards Board Operations Manual***  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

**If you have questions, contact the IEEE-SA  
Standards Board Patent Committee  
Administrator at [patcom@ieee.org](mailto:patcom@ieee.org)**

# IEEE SA Copyright Policy

- **By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.**
  - Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
  - Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
  - For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

# IEEE SA Copyright Policy

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
- IEEE SA Copyright Policy, see
  - Clause 7 of the IEEE SA Standards Board Bylaws  
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
  - Clause 6.1 of the IEEE SA Standards Board Operations Manual  
<https://standards.ieee.org/about/policies/opman/sect6.html>
- IEEE SA Copyright Permission
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- IEEE SA Copyright FAQs
- <http://standards.ieee.org/faqs/copyrights.html/>
- IEEE SA Best Practices for IEEE Standards Development
- [http://standards.ieee.org/develop/policies/best\\_practices\\_for\\_ieee\\_standards\\_development\\_051215.pdf](http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf)
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
- <https://standards.ieee.org/about/policies/opman/sect6.html>



# Working Group

- **Sponsoring Society and Committee:**
  - IEEE Systems, Man and Cybernetics Society
  - Sponsor Chair: Prof Loi Lei Lai (P. R. China)
- **WG Chair:** Dr Chun Sing Lai (UK)
- **WG Vice Chair:** Vacant
- **WG Secretary:** Mr Michael Sanders (USA)
- **IEEE Program Manager:** Ms Christy Bahn (USA)

# Approval of the minutes of the last meeting

<https://sagroups.ieee.org/2814/>

# Scope

- This standard defines techno-economic terminologies used in the **development, construction, and operation** of renewable energy and electrical energy storage systems

# Definition (Standard document)

- Security, stability, economic model and a financial model from the last meeting
- Again we define the definitions that are used and relevant to the standard. We will complete the definition list towards the end of draft standard

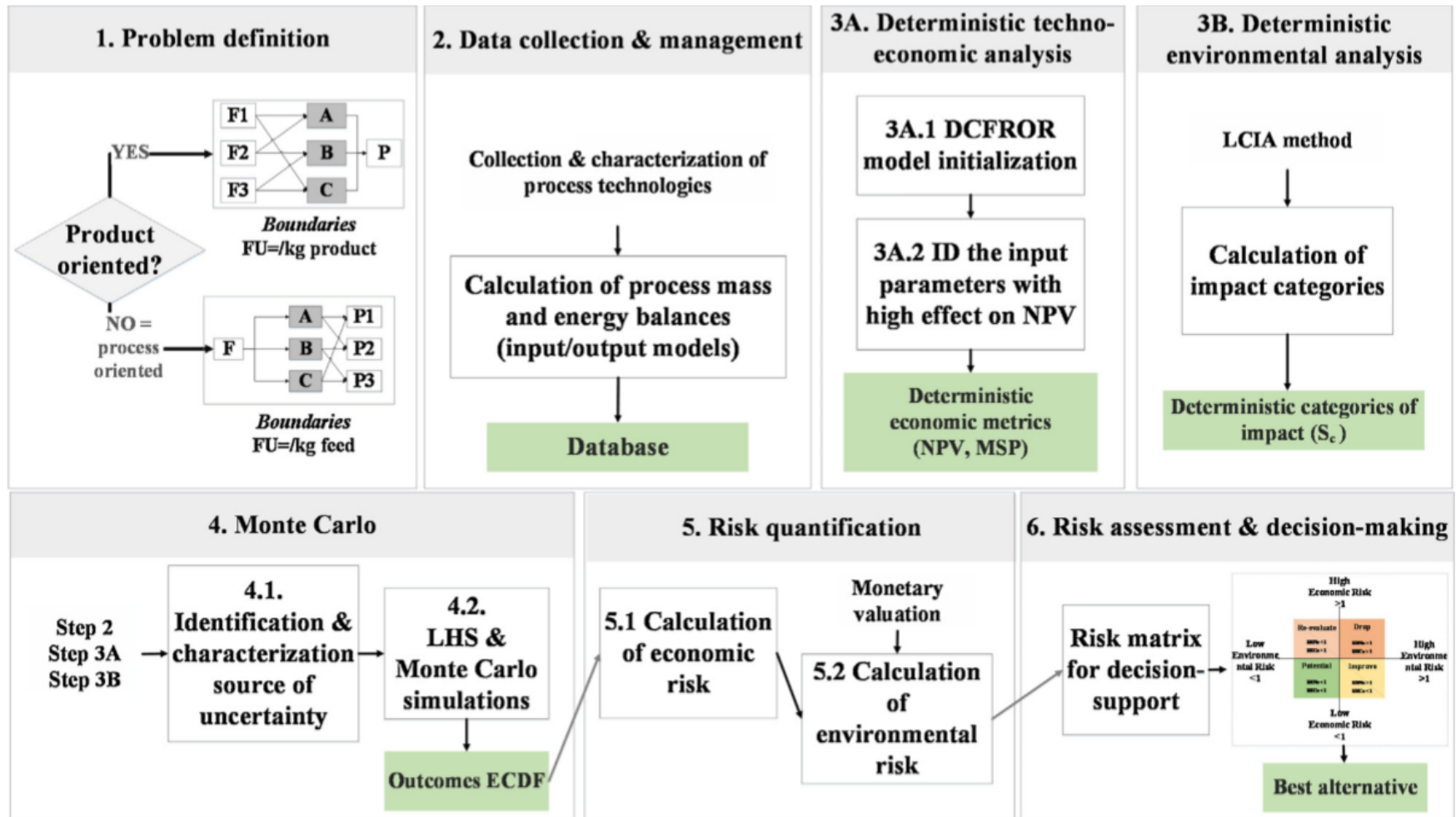
# Economic and financial terminologies

- Define the differences of the two terminologies
- **Cost categorization (economic model):** Capital, O&M, decommissioning costs, and technology-dependent cost (e.g. degradation cost for battery). Opportunity cost?
- **Revenue categorization (financial model):** Need to be careful as this is usually country dependent, e.g. grid services and energy policies. Few typical examples e.g. Europe, USA, China?

# TEA and LCA

- Techno–economic analysis (TEA) could help to assess the potential economic feasibilities, bottlenecks, operation targets for process improvement and identify further research and development effort requirements during early stages of different technologies.
- On the other hand, life cycle assessment (LCA) could help assess the potential environmental impacts, identify environmental hotspots and help improve the overall product or systems life cycle for reduced environmental impacts.
- Ref: Shah, A., Baral, N.R. and Manandhar, A., 2016. Technoeconomic analysis and life cycle assessment of bioenergy systems. In *Advances in Bioenergy* (Vol. 1, pp. 189-247). Elsevier.

# An example of framework



# Examples of application of the methodology (Case studies)

- The use of system monitoring/remote control of assets (big data and techno economics)?
- Grid and off grid systems
- Load demand response (including EV and air conditioning)
- For EV's (at least) the split between main and auxiliary batteries
- Direct and indirect energy storage methods (e.g. generation integrated energy storage)
- Open the floor for discussion



# IEEE SMC 2020

- A **review paper** from P2814 Standard Working Group
- Overview of the standard
- Categorization of energy storage technologies (e.g. supercapacitors, thermal storage)
- Cost categorization
- To predict the future cost of energy storage and low-carbon generation technologies (\$/kWh vs time, regression models)
- Deadline: **April 15, 2020**

# IEEE Smart Cities Newsletter

- **An article** from P2814 Standard Working Group
- The IEEE Smart Cities Newsletter, an online publication features practical and timely technical information and forward-looking commentary on Smart Cities developments and deployments around the world.
- Overview of the standard
- 800-1000 words
- <https://smartcities.ieee.org/newsletter>

# Structure of Standard

- 1. Overview (recommended practices), scope and purpose
- 2. Normative references (related standards)
- 3. Definitions (terms and nomenclature)
- 4. Need for the Recommended Practice, context of problems, outline of the recommended practice
- 5. Methodology
- 6. Examples of application of the methodology
- 7. Bibliography

# P2814 status

- IMPORTANT DATES
- PAR Request Date: 14 Feb 2019
- PAR Approval Date: 21 May 2019
- PAR Expiration Date: 31 Dec 2023

# Tasks

- Structuring the scope of the PAR
- Task force/sub working groups
- Initial Draft document – (important to establish the ideas that fired the proposal)
- Vice-Chair position
- Meeting (join me, approx. every 1-2 months)

# Vacant voluntary positions available

- **Vice Chair:** assists the Chair in all areas, including running the meeting when the Chair is absent or wishes to recuse themselves.

Ref: <https://standards.ieee.org/develop/mobilizing-working-group/governedwg.html>

# Conclusion

- Send us your interest in volunteering positions (personal statement and CV)
  - AOB
  - Schedule of the next teleconference: March or April 2020, Time TBD
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- Thank you for your interest and participation in this WG!

# Contacts

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